

## **APPENDIX A**

### **Existing Peak Hour Intersection Turning Movements Counts and Roadway Link ADT's**

# ITM Peak Hour Summary

Prepared by:

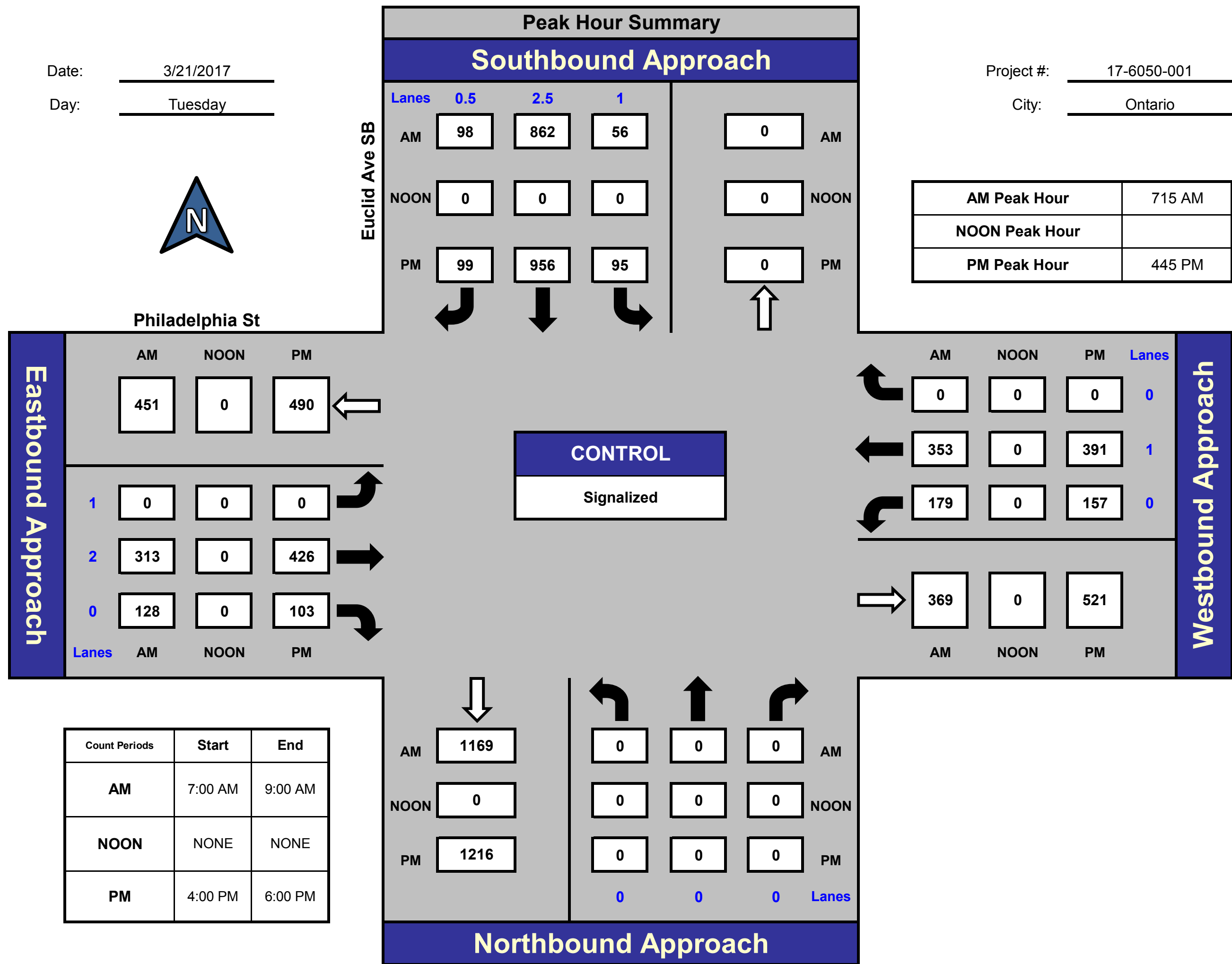


National Data & Surveying Services

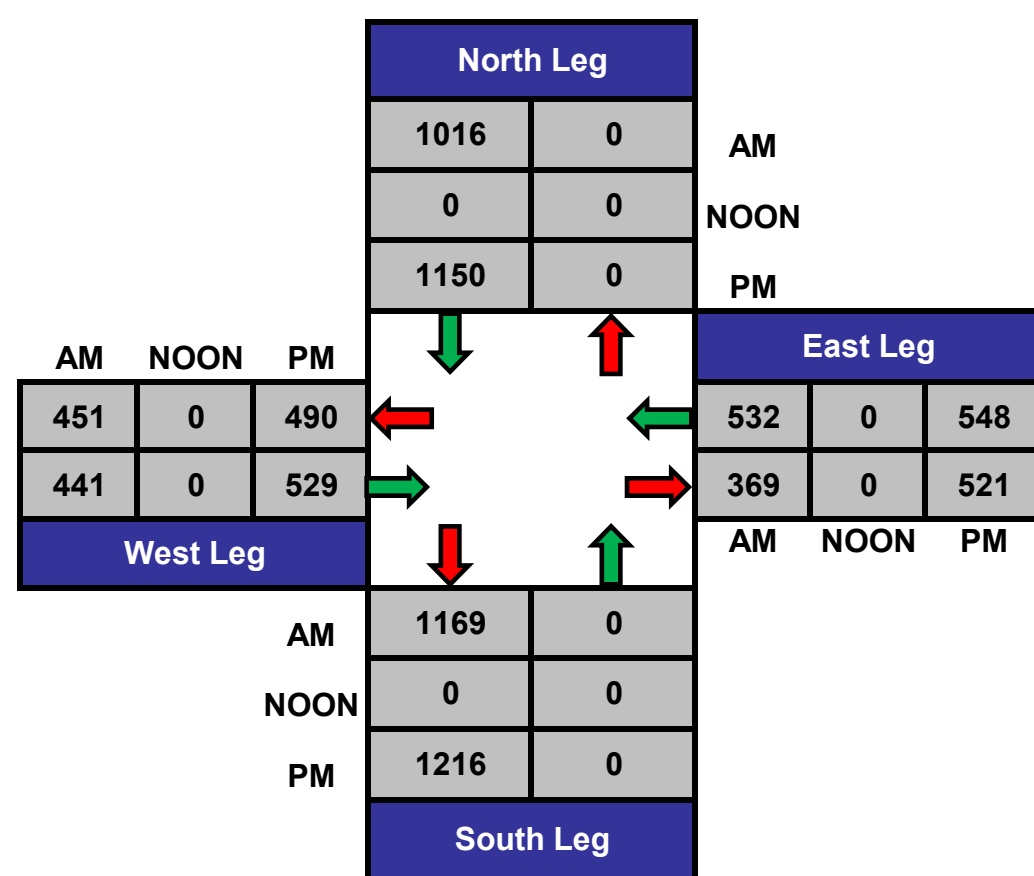
## Euclid Ave SB and Philadelphia St, Ontario

Date: 3/21/2017  
Day: Tuesday

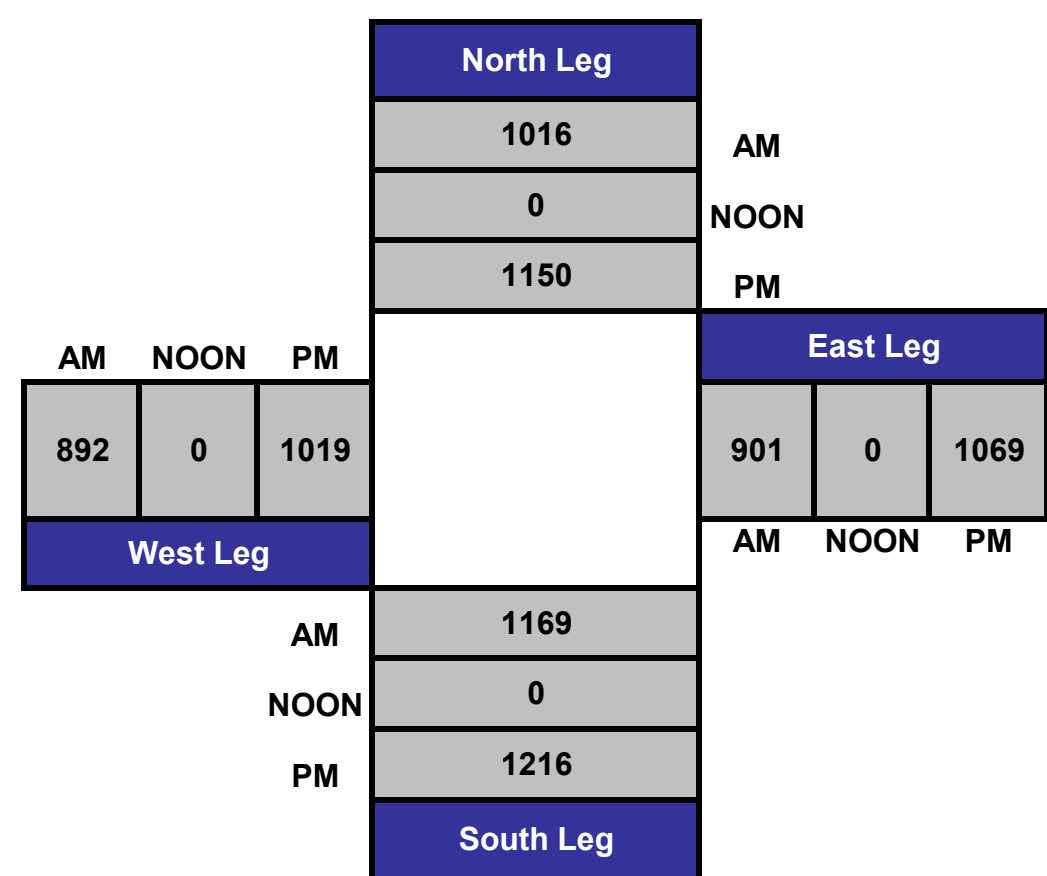
Project #: 17-6050-001  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg





# ITM Peak Hour Summary

Prepared by:

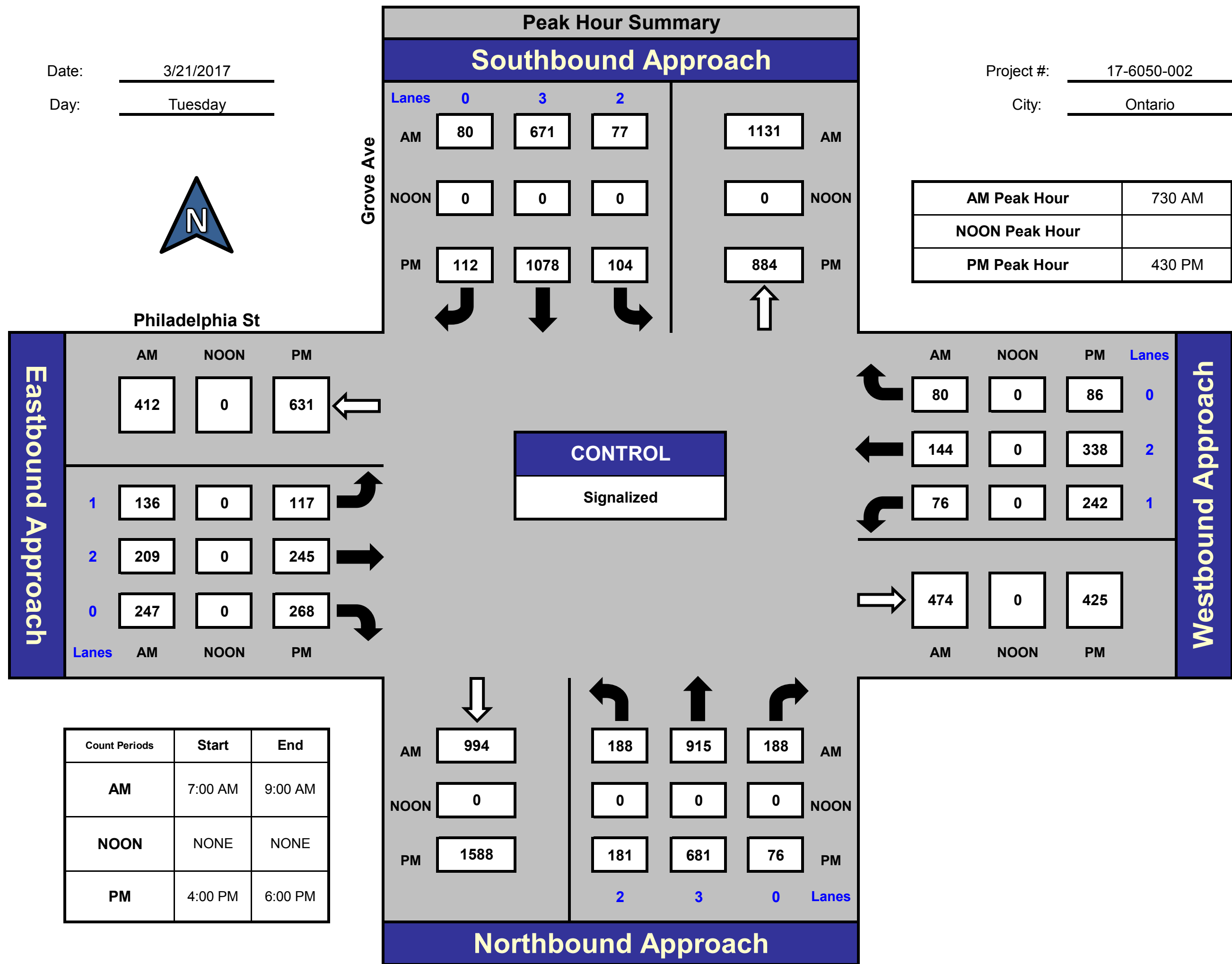


National Data & Surveying Services

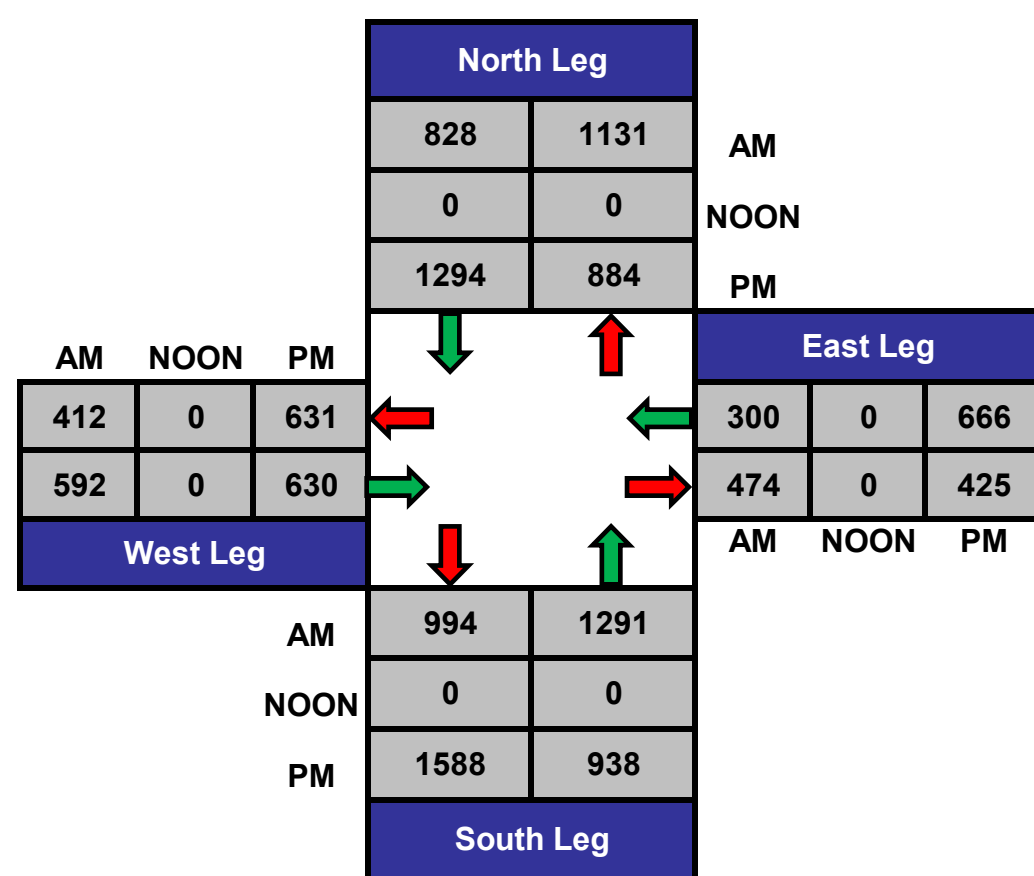
## Grove Ave and Philadelphia St, Ontario

Date: 3/21/2017  
Day: Tuesday

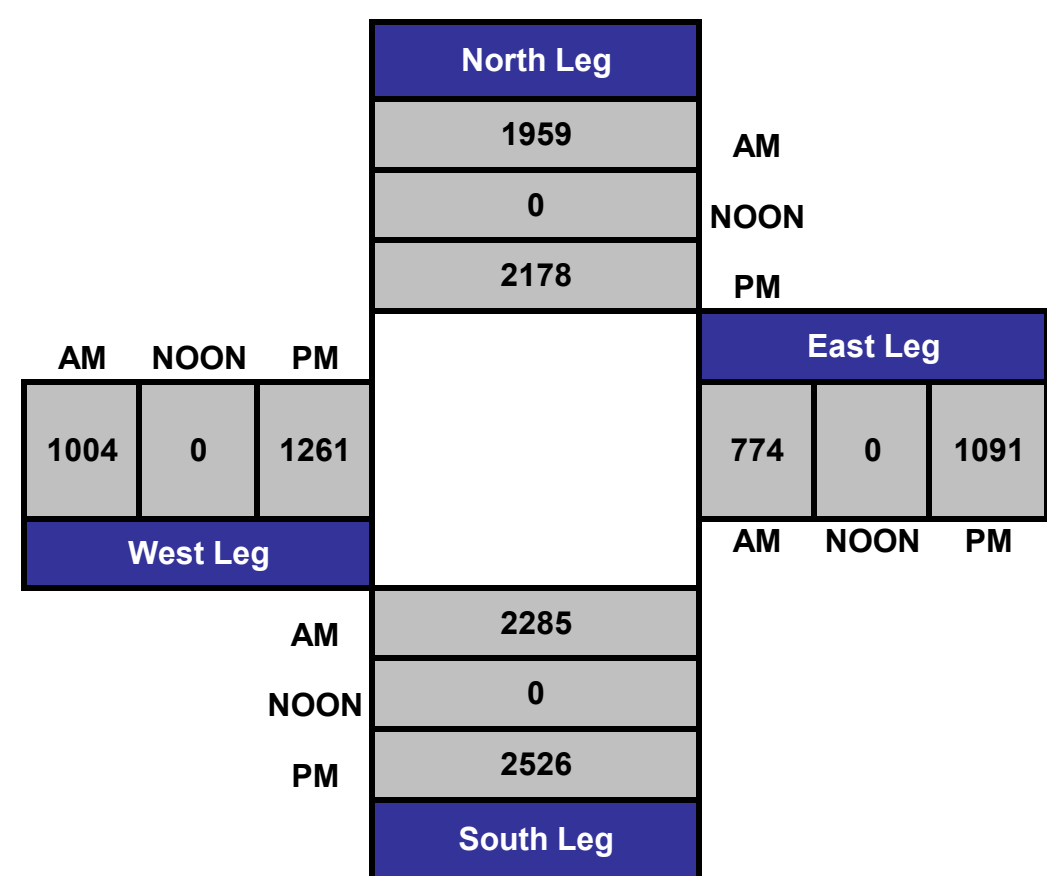
Project #: 17-6050-002  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

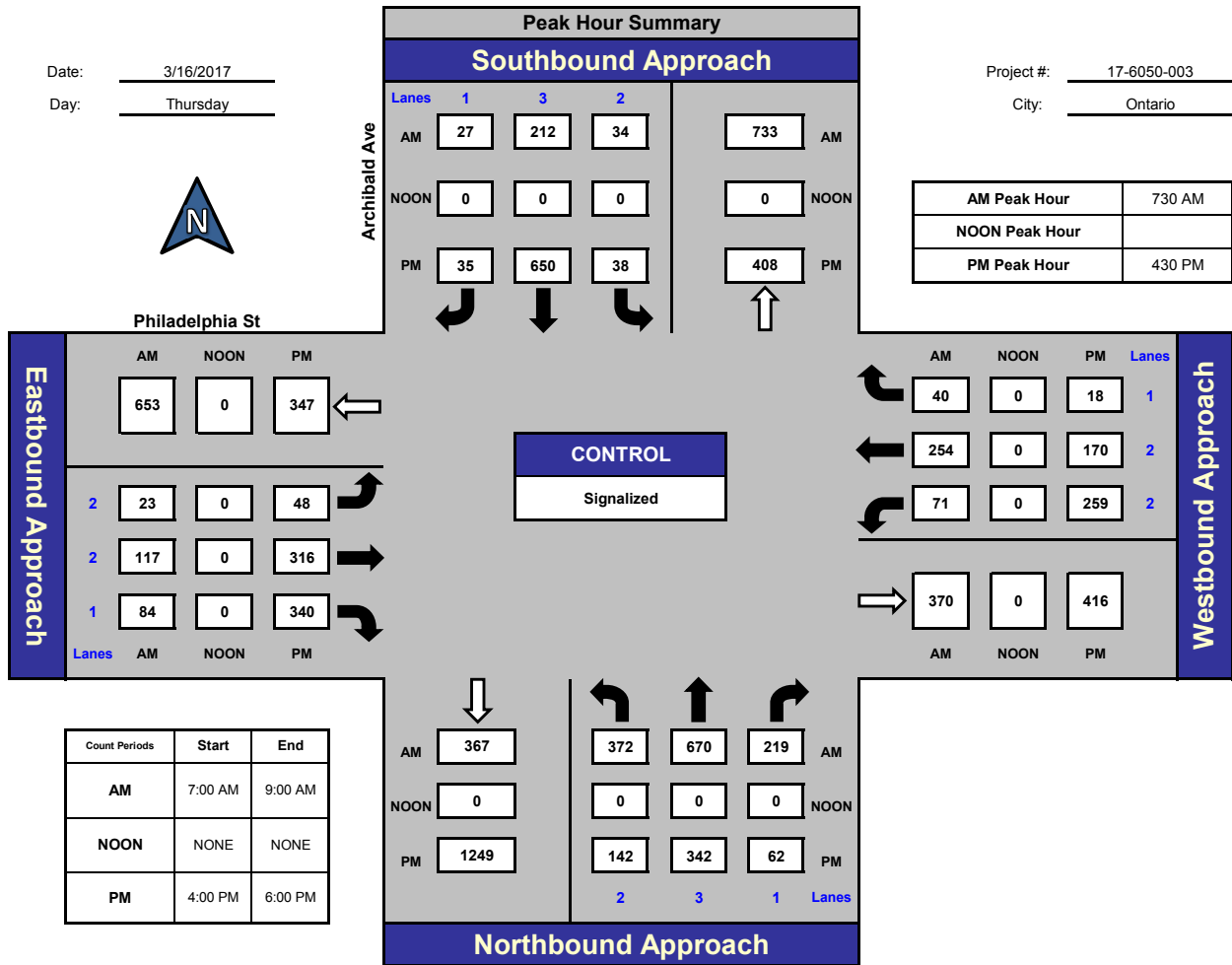


National Data & Surveying Services

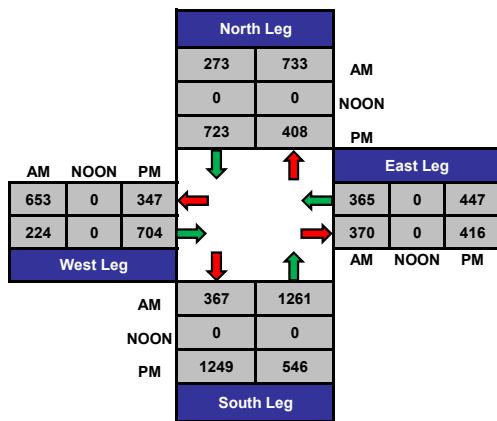
## Archibald Ave and Philadelphia St., Ontario

Date: 3/16/2017  
Day: Thursday

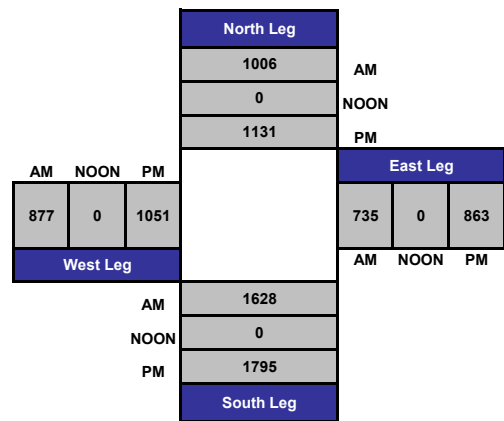
Project #: 17-6050-003  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

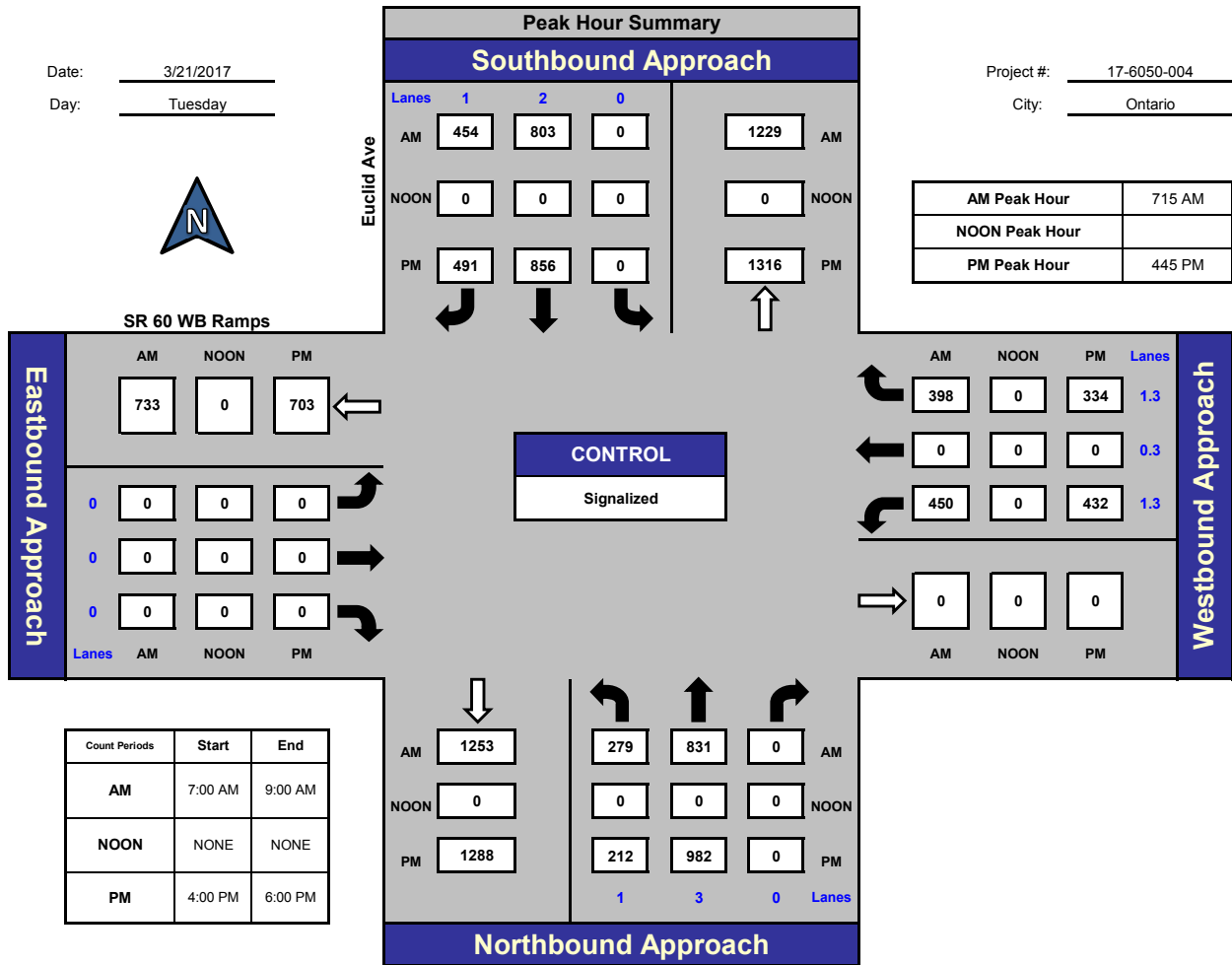


National Data & Surveying Services

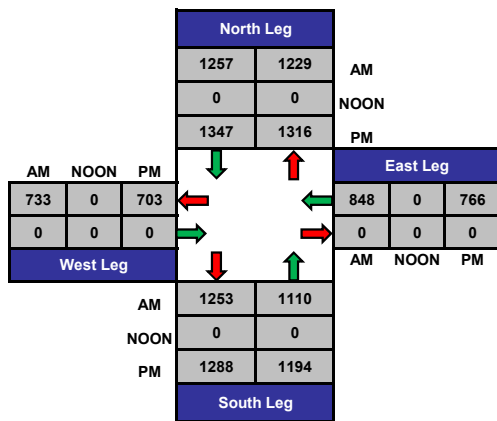
## Euclid Ave and SR 60 WB Ramps, Ontario

Date: 3/21/2017  
Day: Tuesday

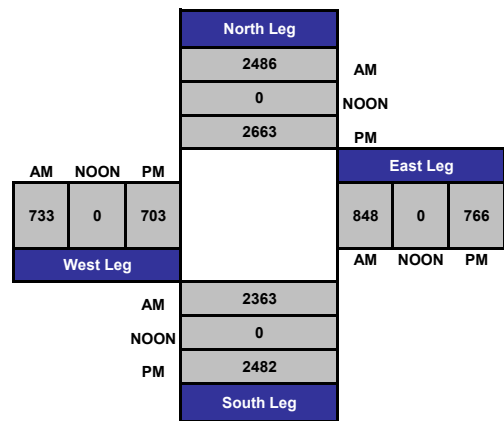
Project #: 17-6050-004  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

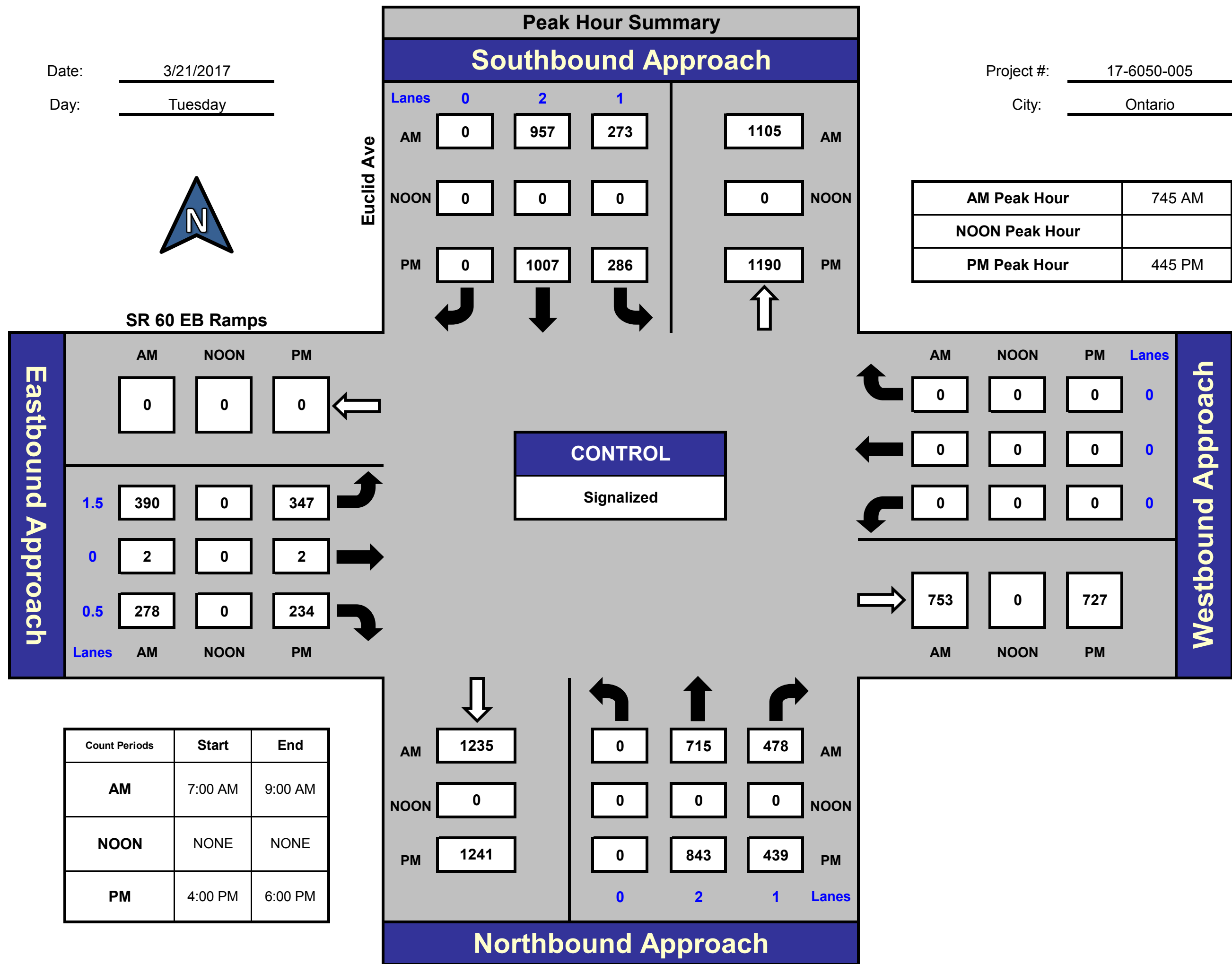


National Data & Surveying Services

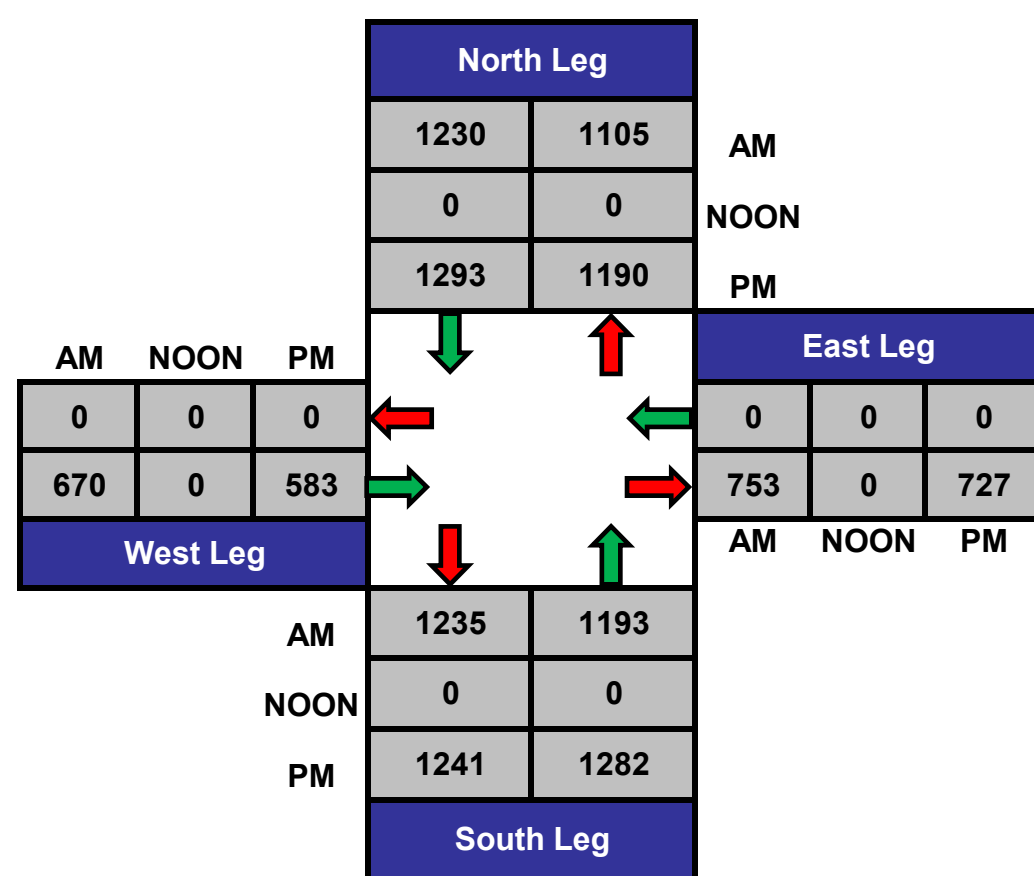
## Euclid Ave and SR 60 EB Ramps , Ontario

Date: 3/21/2017  
Day: Tuesday

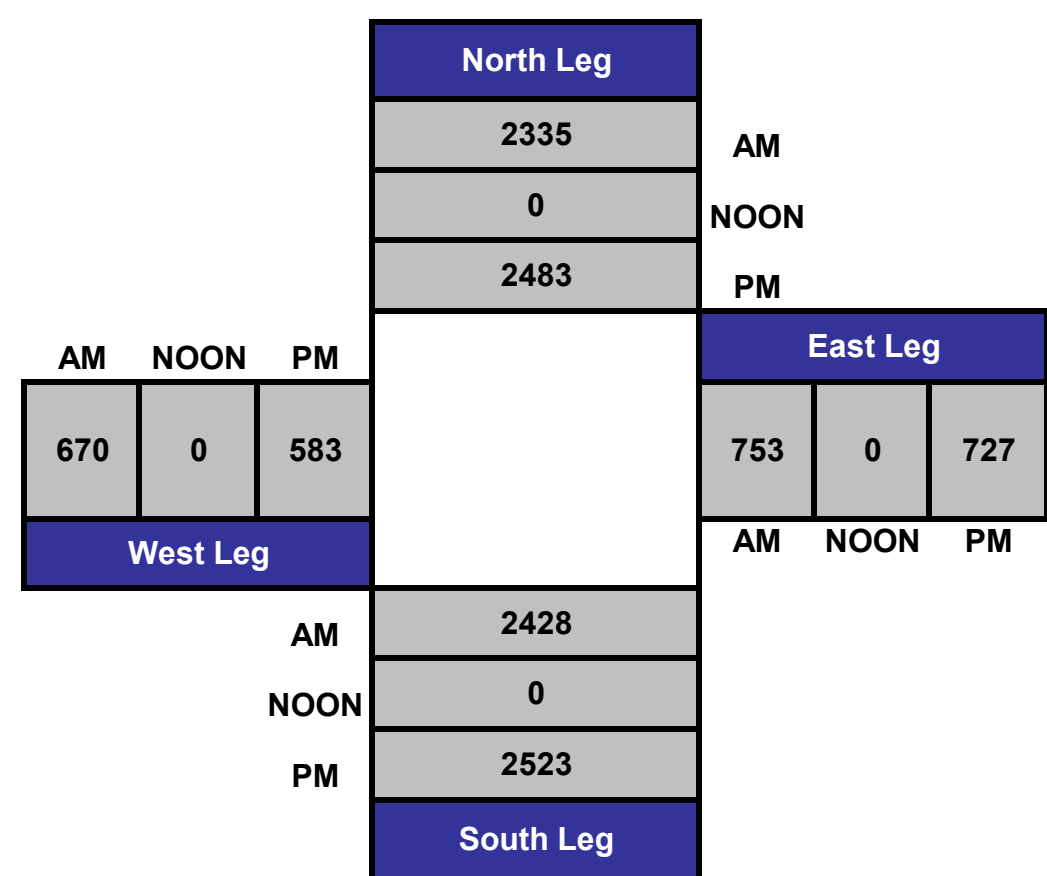
Project #: 17-6050-005  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

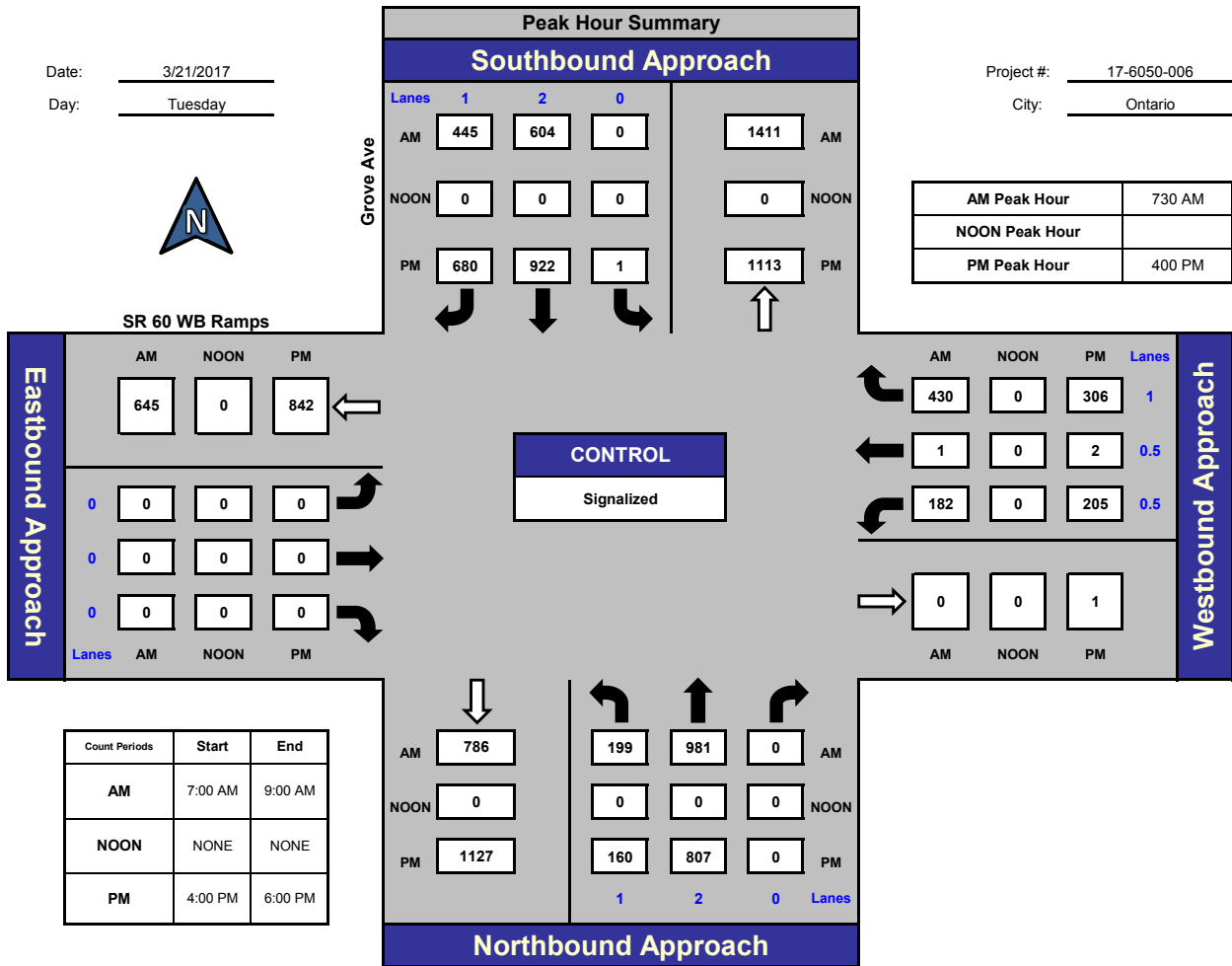
## Grove Ave and SR 60 WB Ramps, Ontario

Date: 3/21/2017

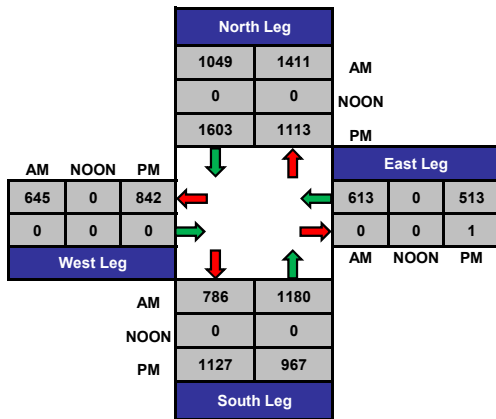
Day: Tuesday

Project #: 17-6050-006

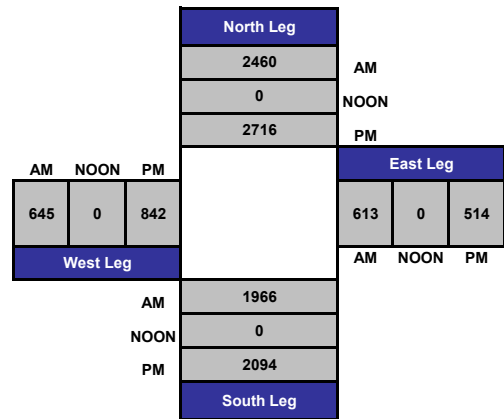
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

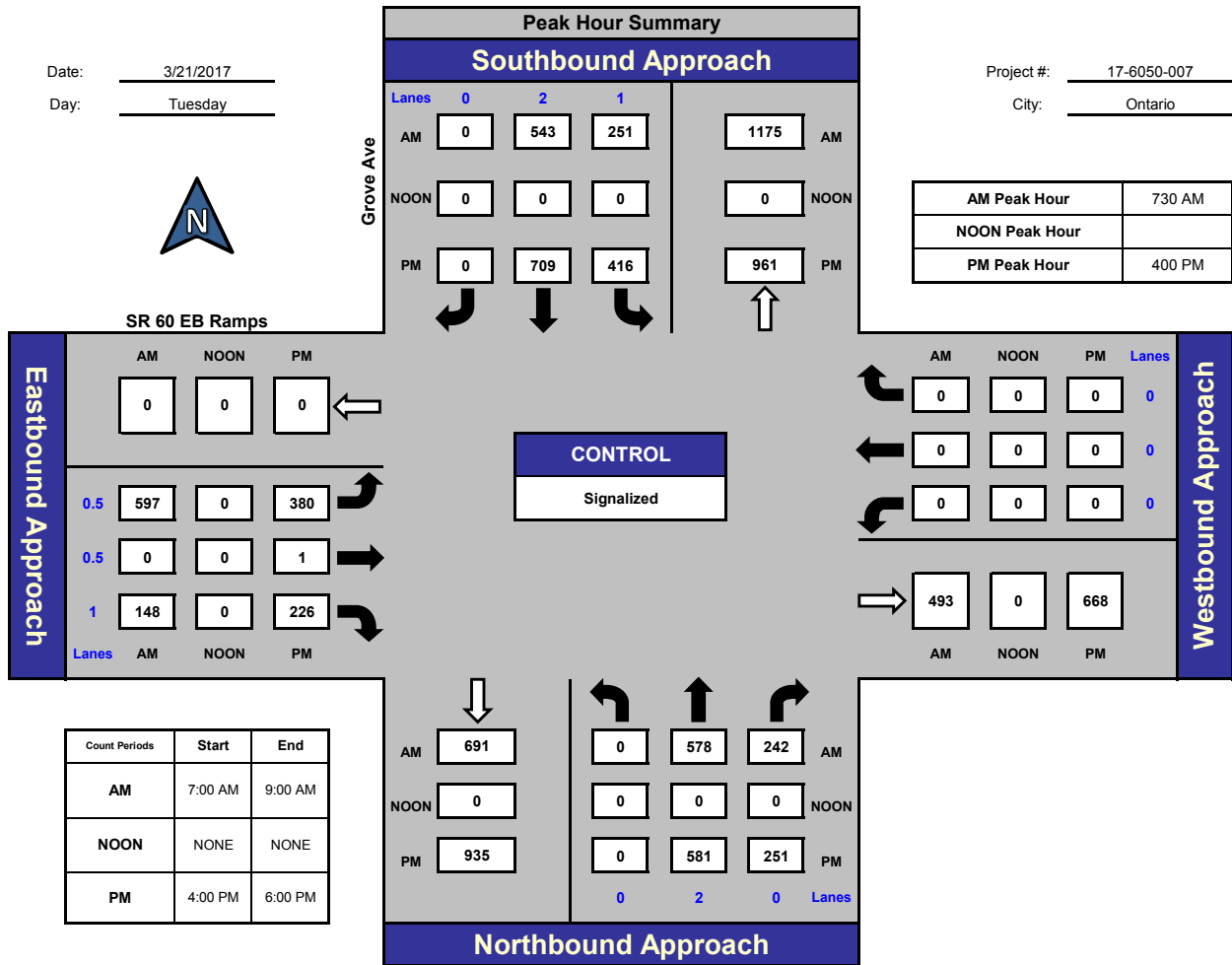


National Data & Surveying Services

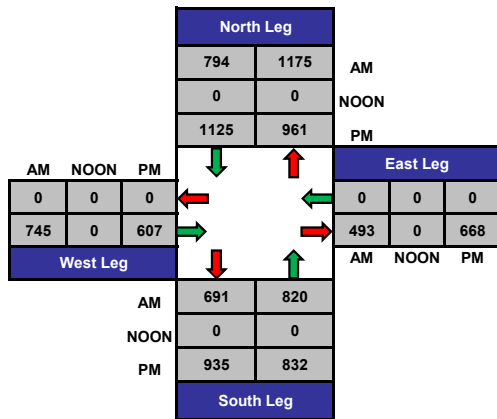
## Grove Ave and SR 60 EB Ramps, Ontario

Date: 3/21/2017  
Day: Tuesday

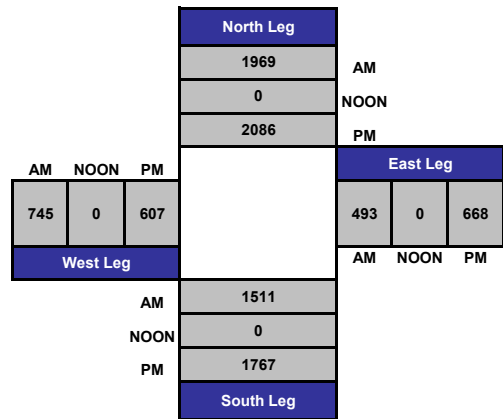
Project #: 17-6050-007  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

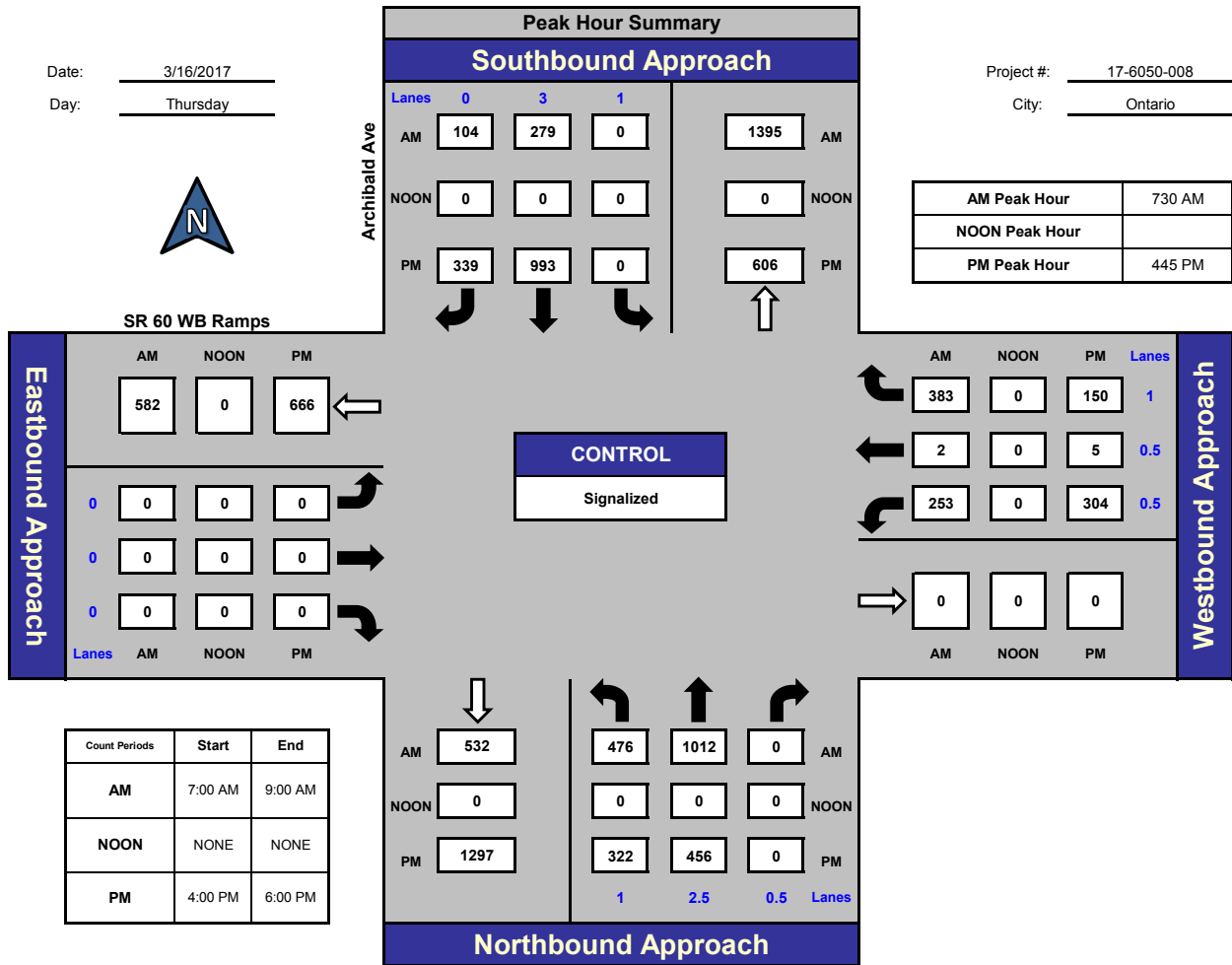
## Archibald Ave and SR 60 WB Ramps, Ontario

Date: 3/16/2017

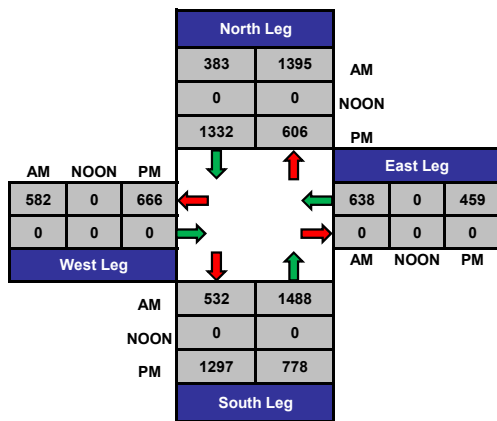
Day: Thursday

Project #: 17-6050-008

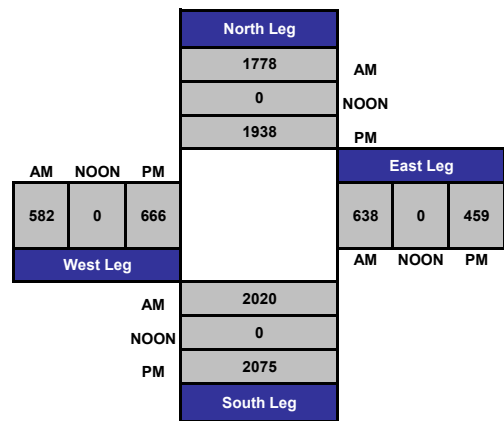
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

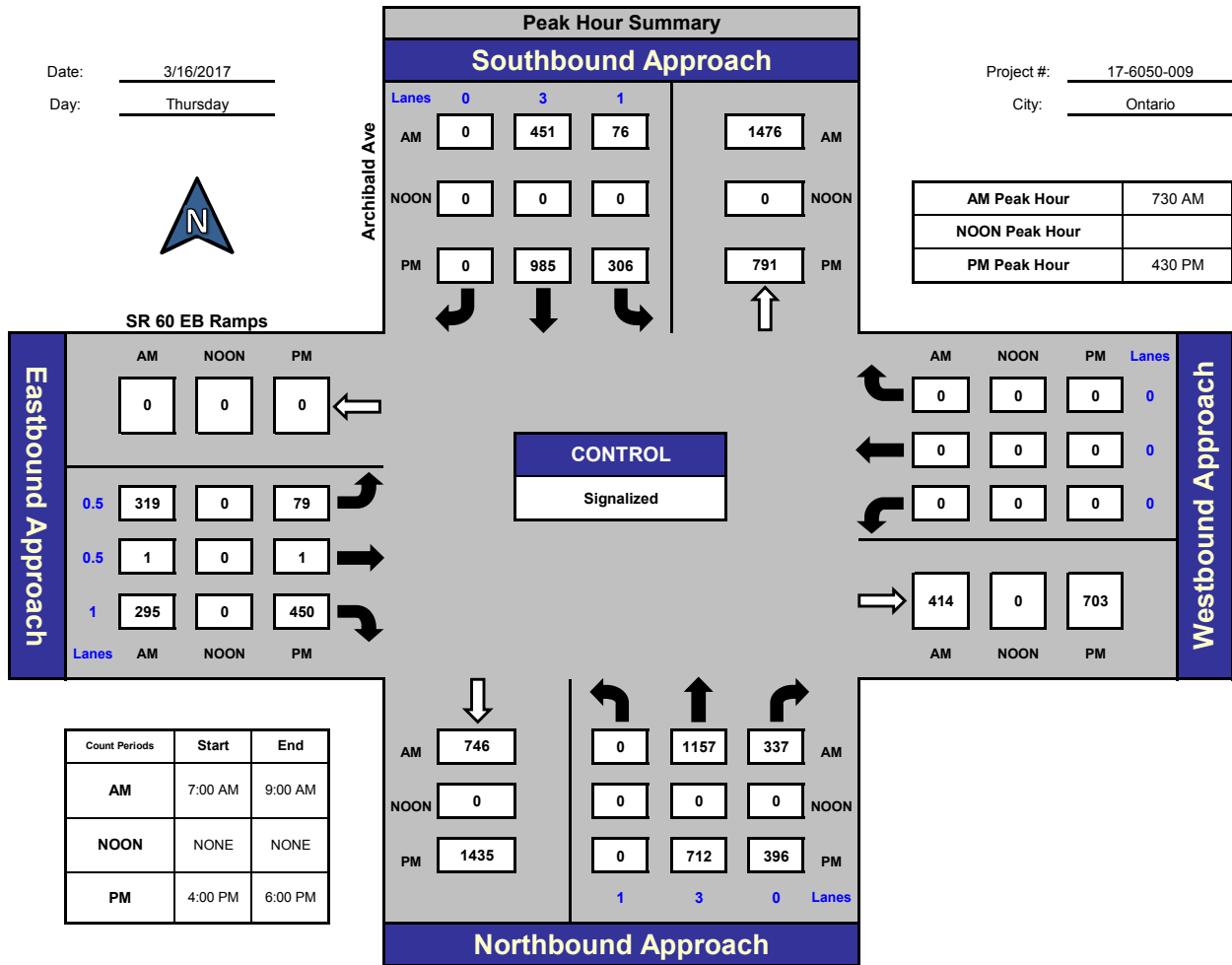


National Data & Surveying Services

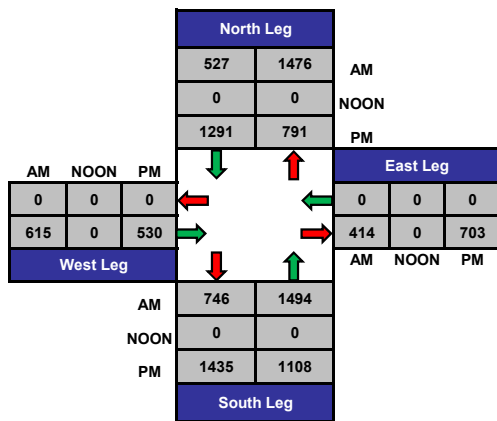
## Archibald Ave and SR 60 EB Ramps, Ontario

Date: 3/16/2017  
Day: Thursday

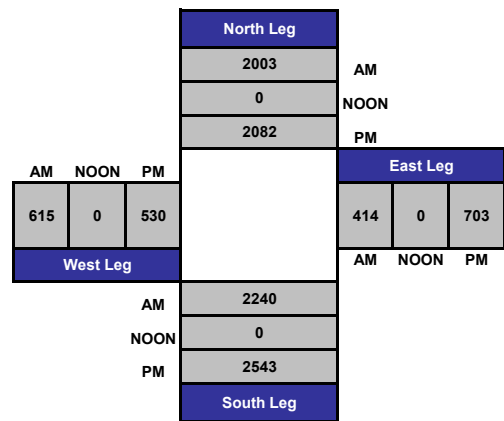
Project #: 17-6050-009  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg





# ITM Peak Hour Summary

Prepared by:

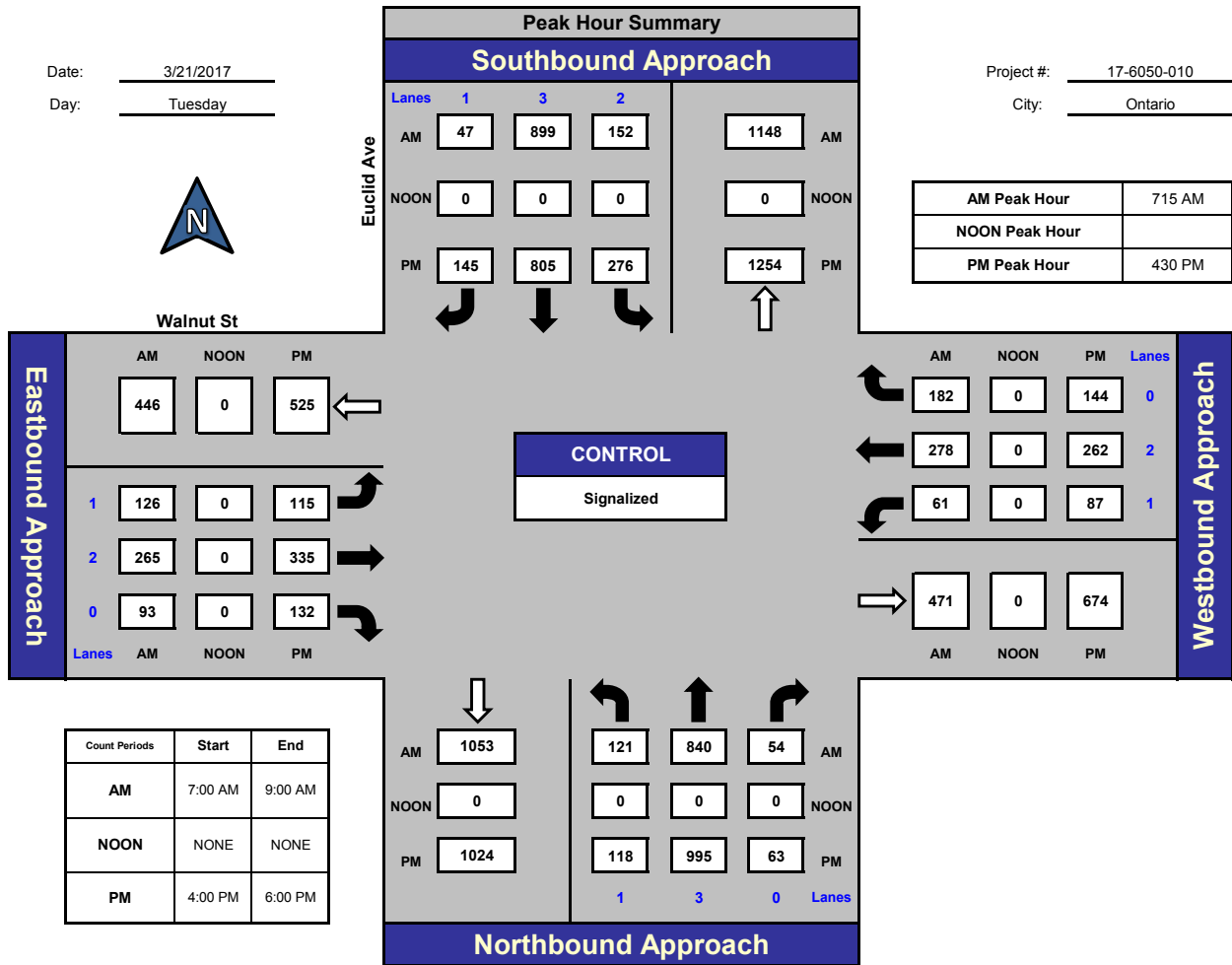


National Data & Surveying Services

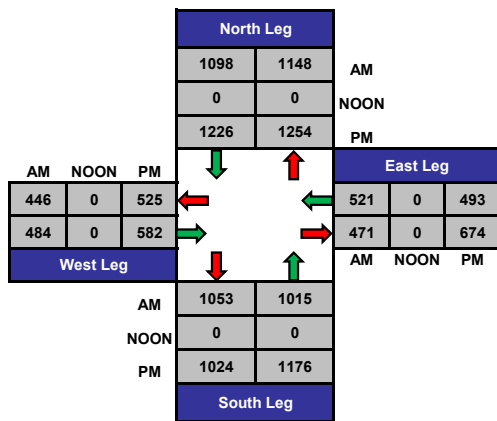
## Euclid Ave and Walnut St., Ontario

Date: 3/21/2017  
Day: Tuesday

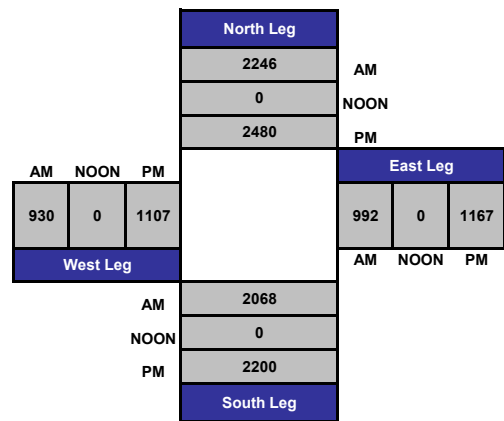
Project #: 17-6050-010  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

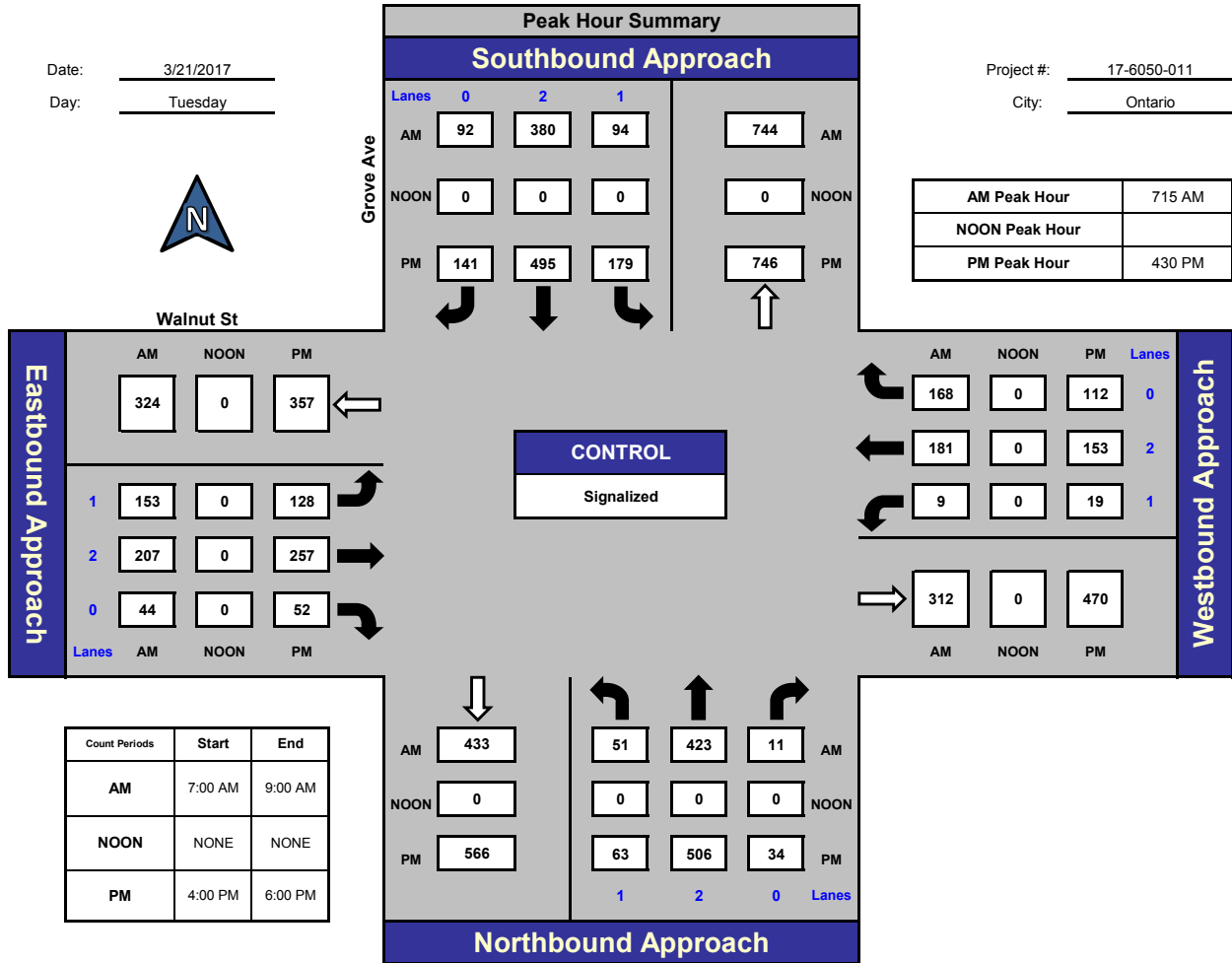
## Grove Ave and Walnut St., Ontario

Date: 3/21/2017

Day: Tuesday

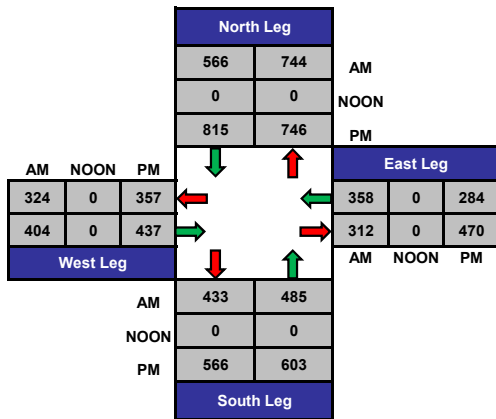
Project #: 17-6050-011

City: Ontario

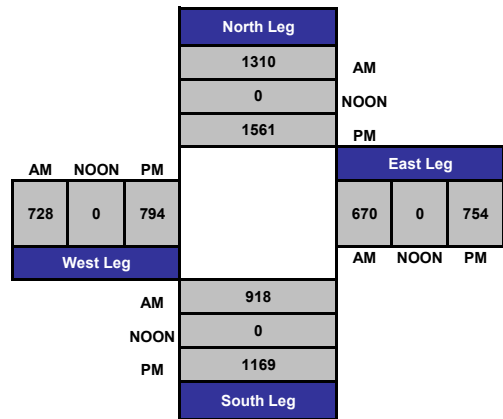


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

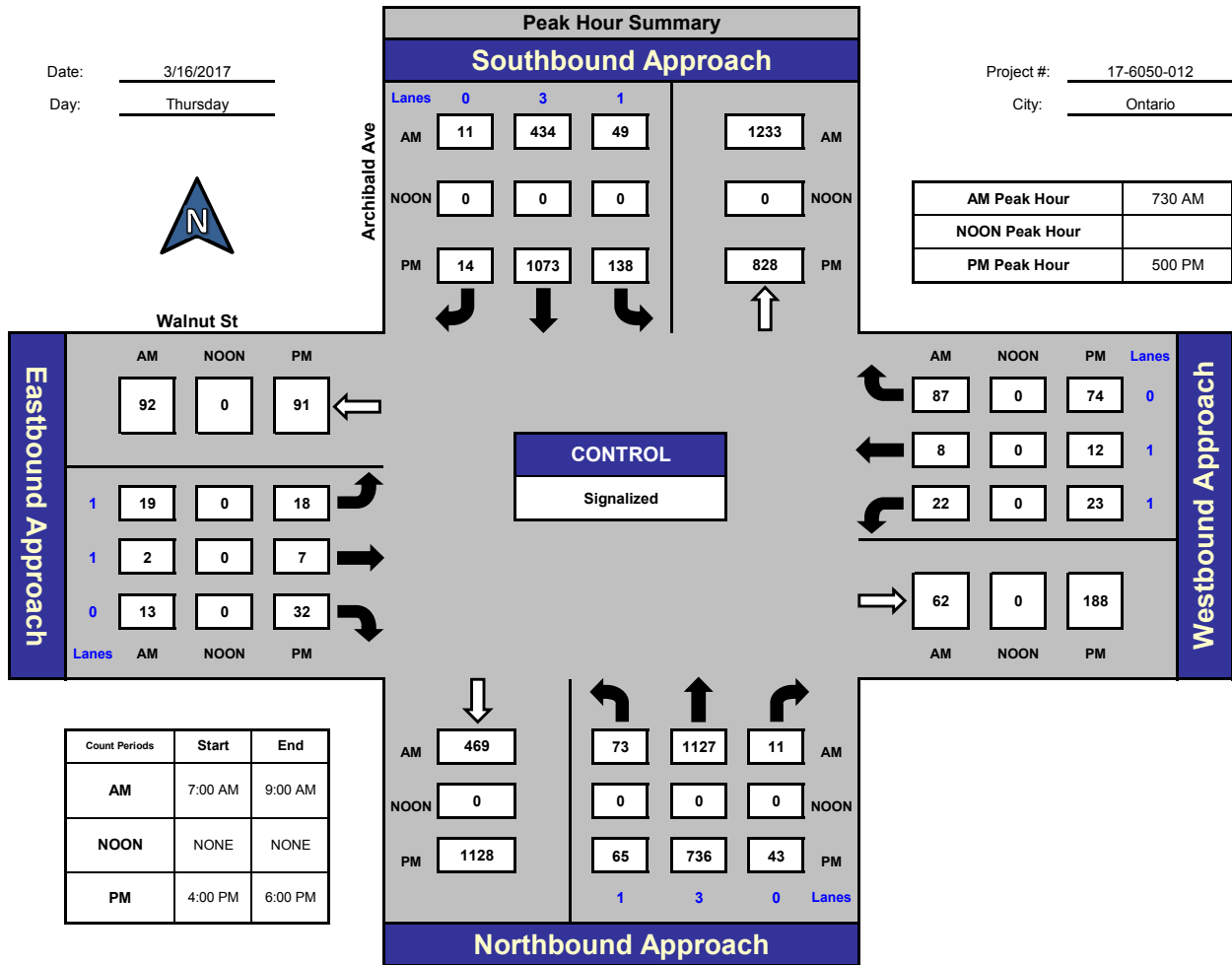


National Data & Surveying Services

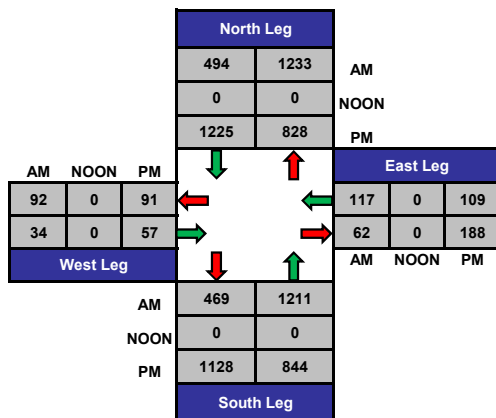
## Archibald Ave and Walnut St., Ontario

Date: 3/16/2017  
Day: Thursday

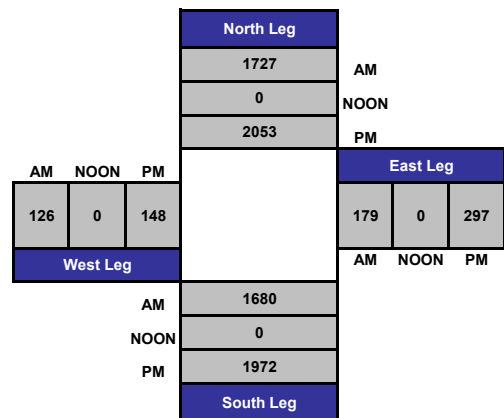
Project #: 17-6050-012  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

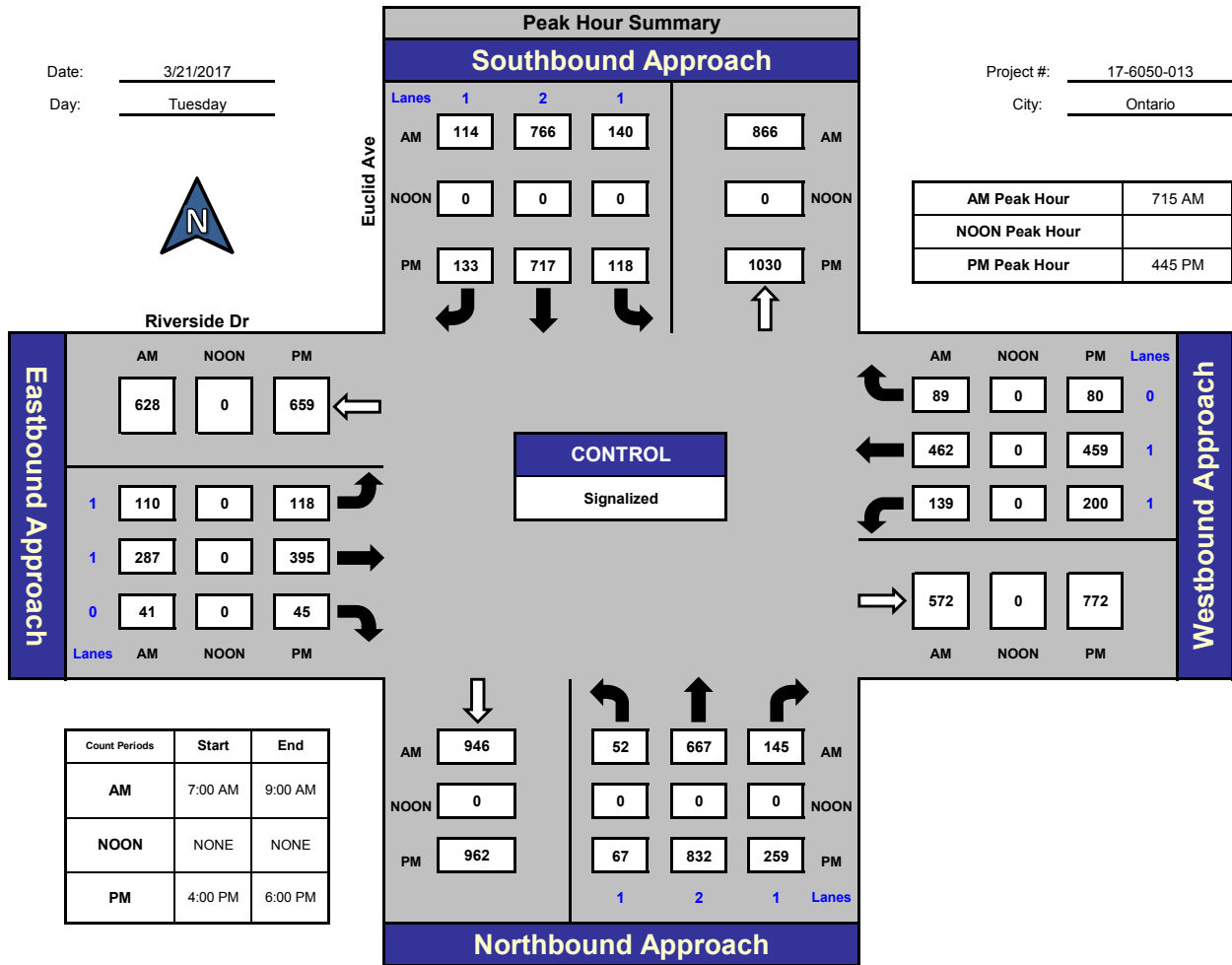
## Euclid Ave and Riverside Dr., Ontario

Date: 3/21/2017

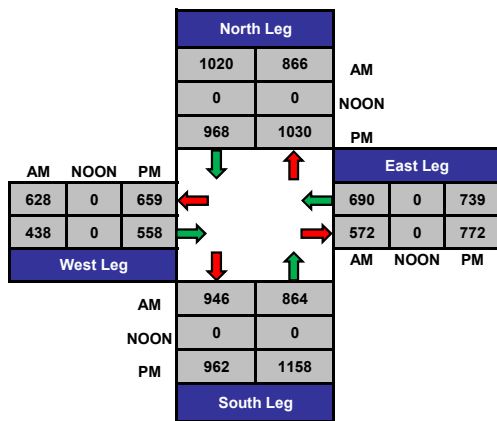
Day: Tuesday

Project #: 17-6050-013

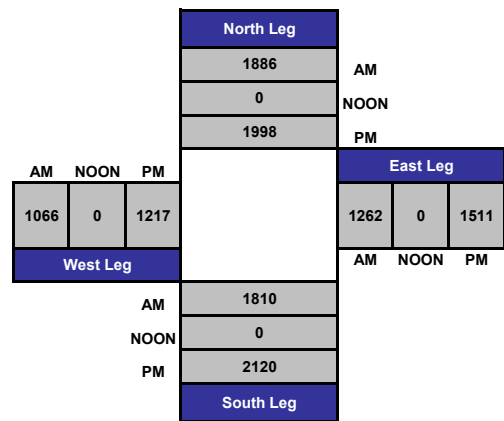
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

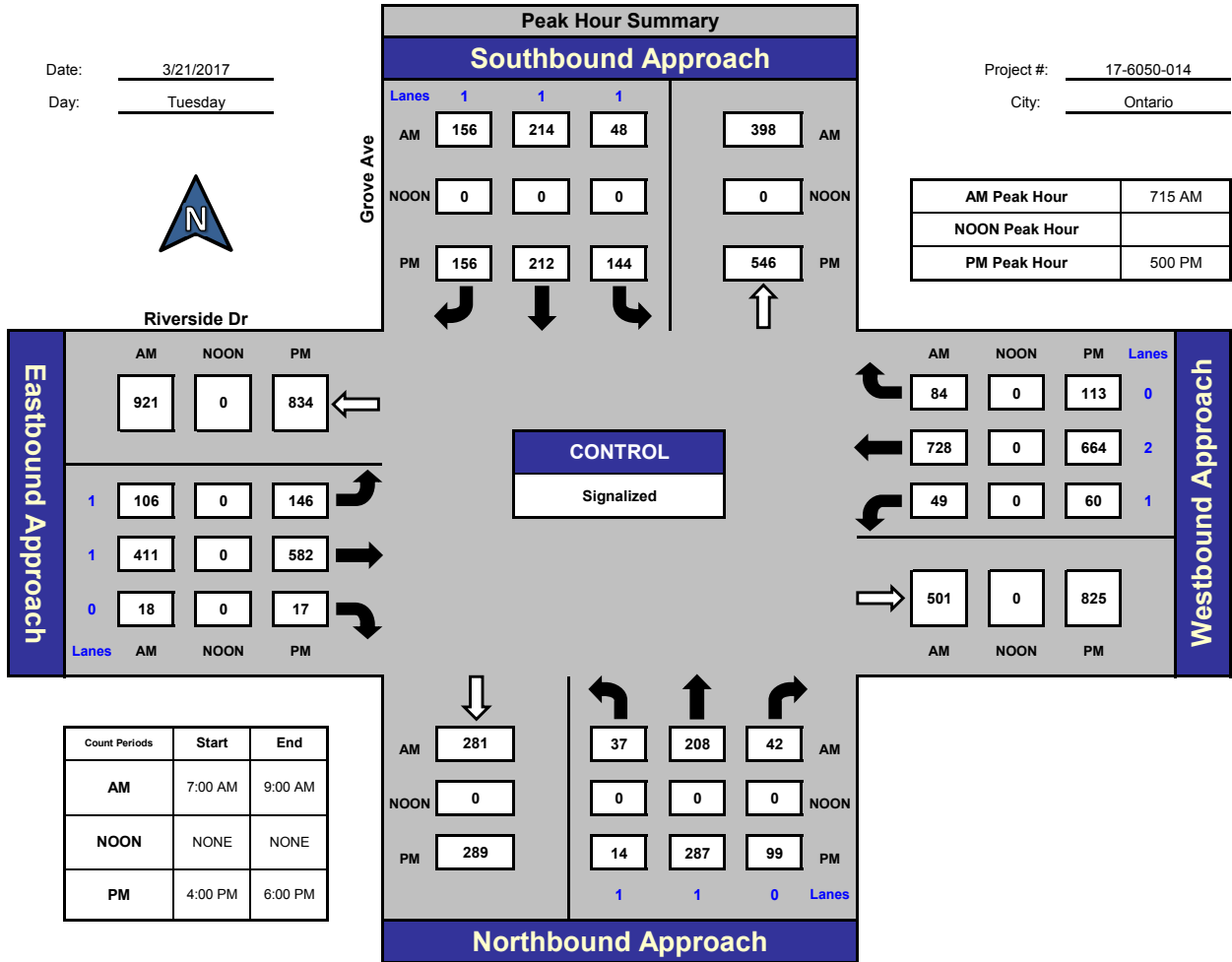
## Grove Ave and Riverside Dr., Ontario

Date: 3/21/2017

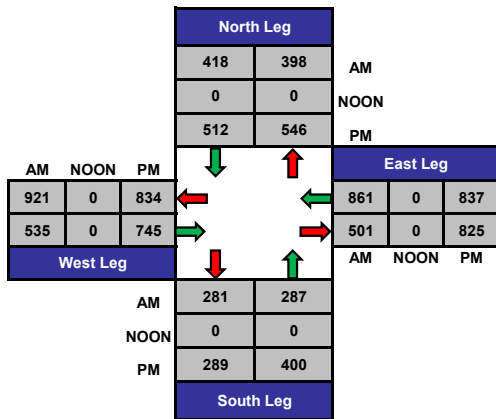
Day: Tuesday

Project #: 17-6050-014

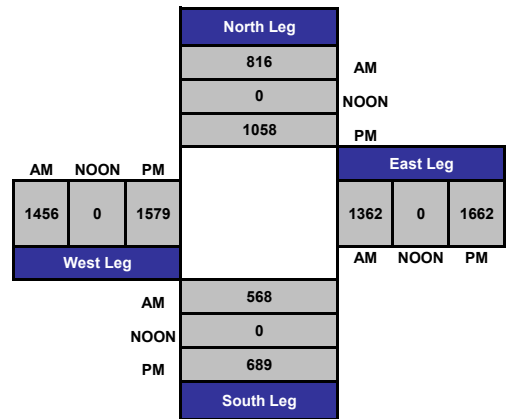
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

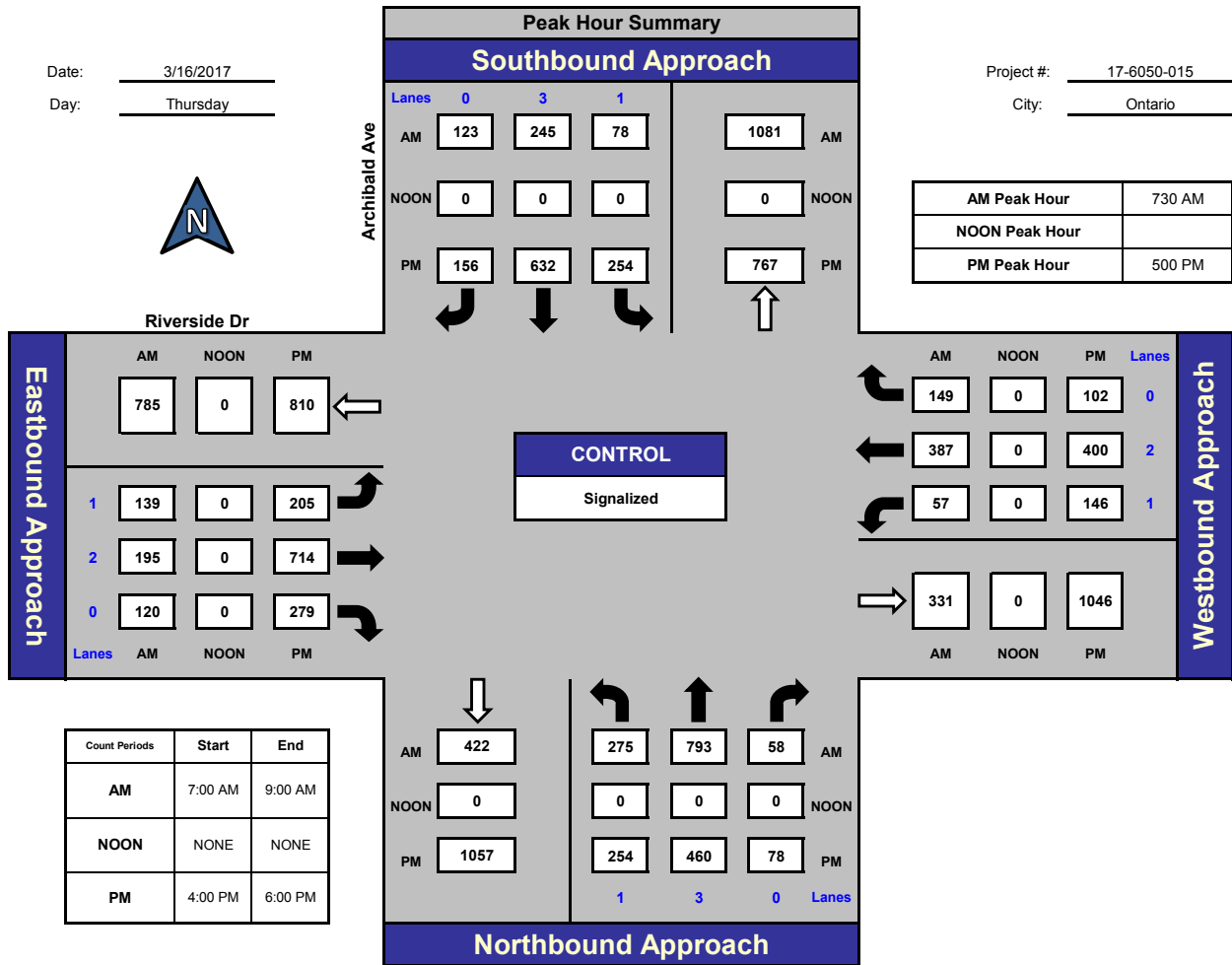


National Data & Surveying Services

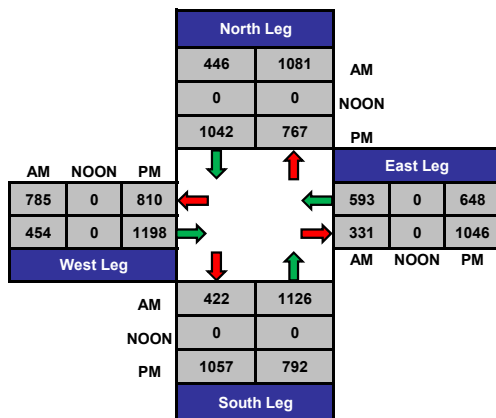
## Archibald Ave and Riverside Dr, Ontario

Date: 3/16/2017  
Day: Thursday

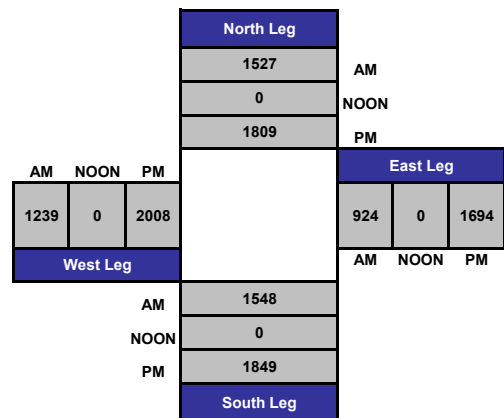
Project #: 17-6050-015  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

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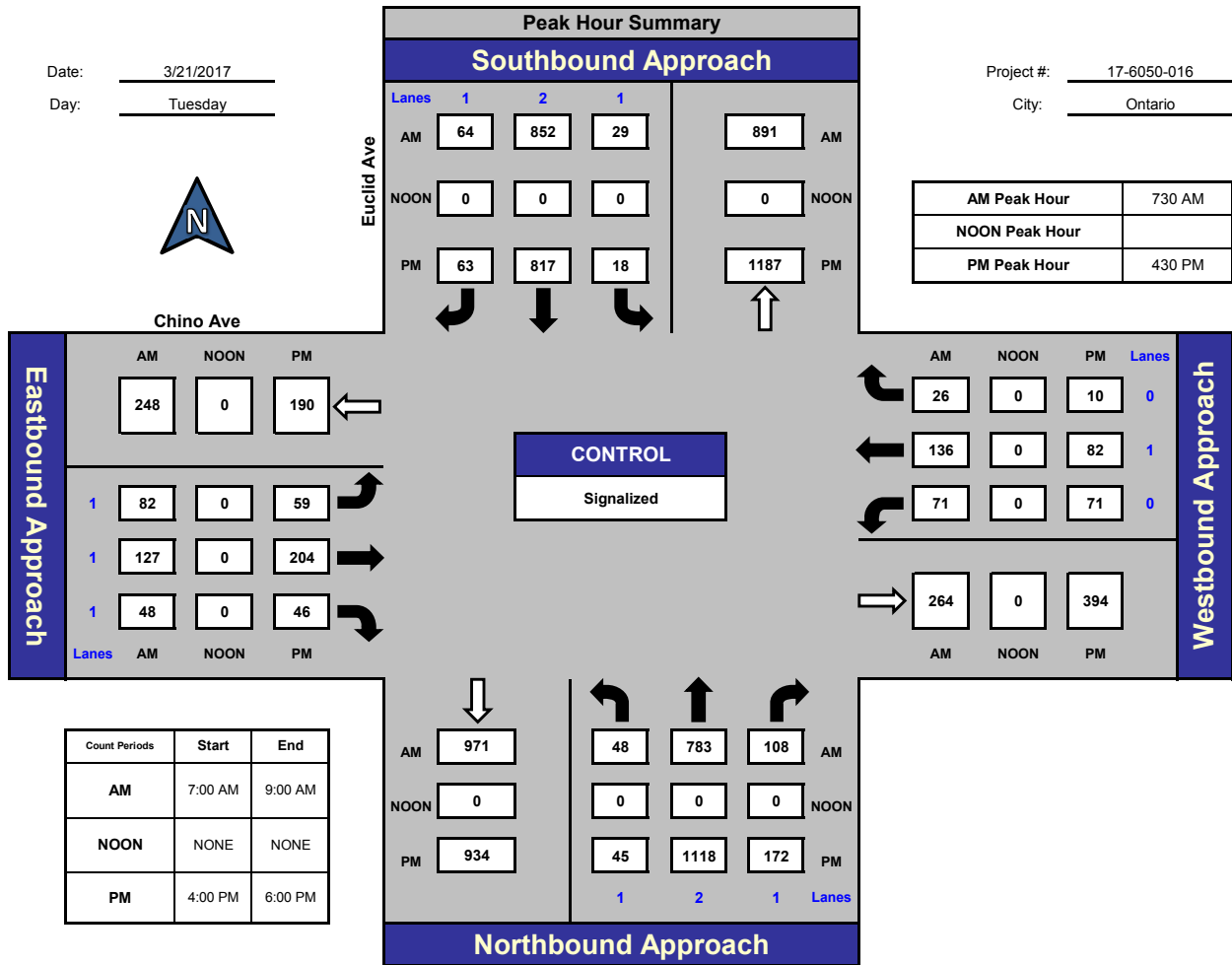


National Data & Surveying Services

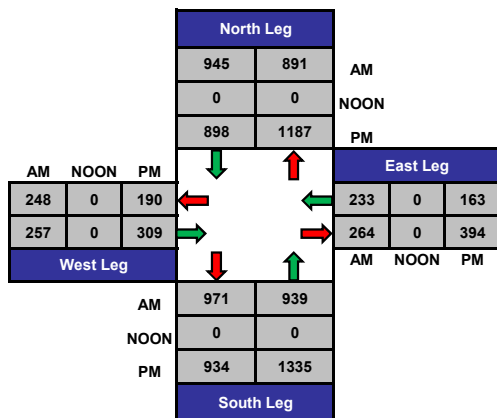
## Euclid Ave and Chino Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

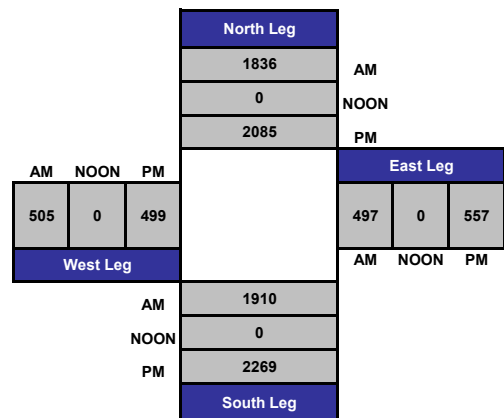
Project #: 17-6050-016  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

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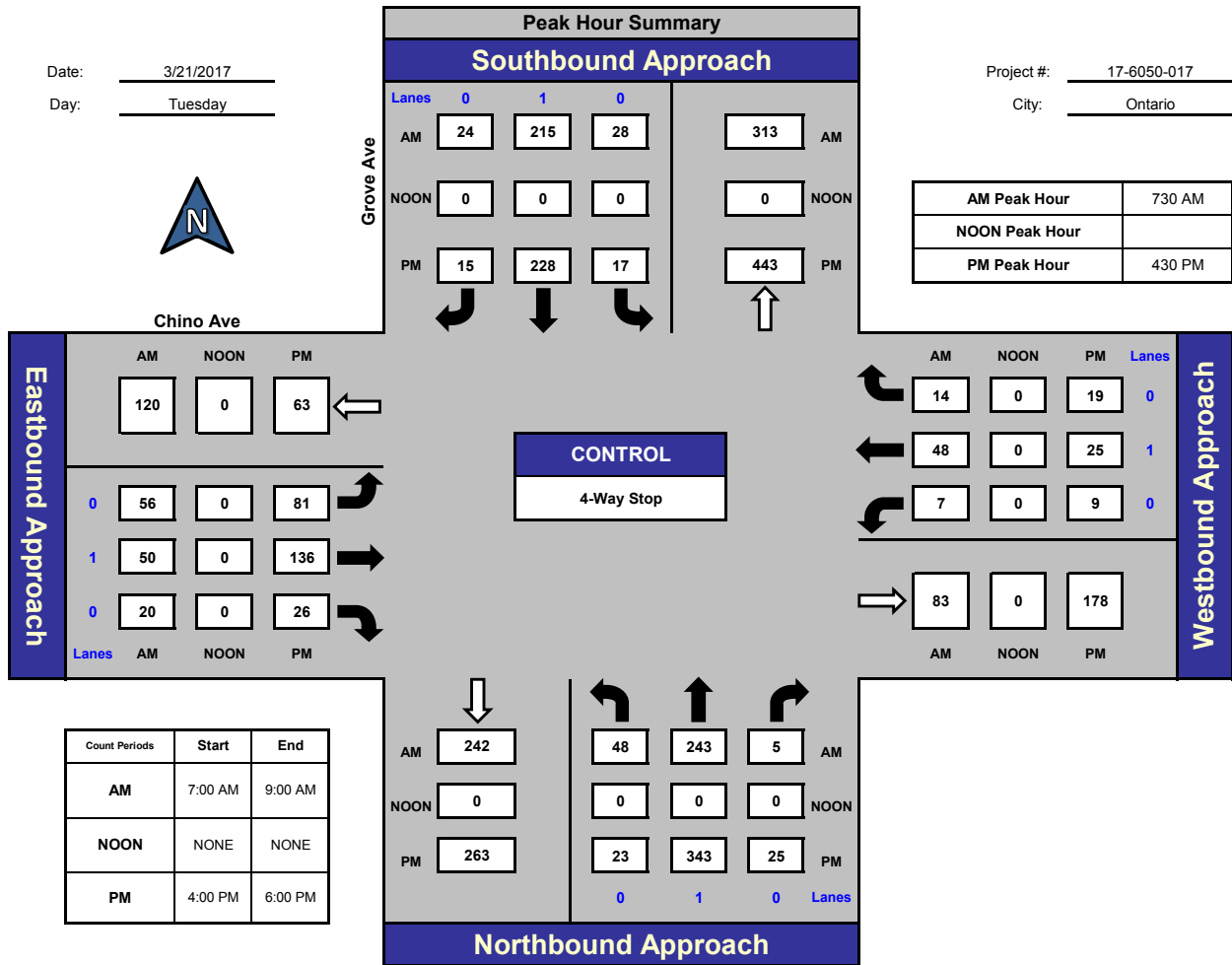


National Data & Surveying Services

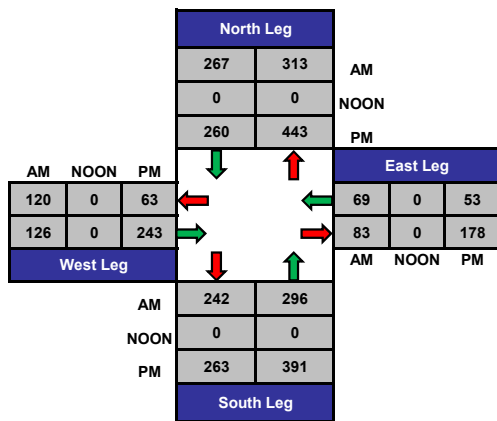
## Grove Ave and Chino Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

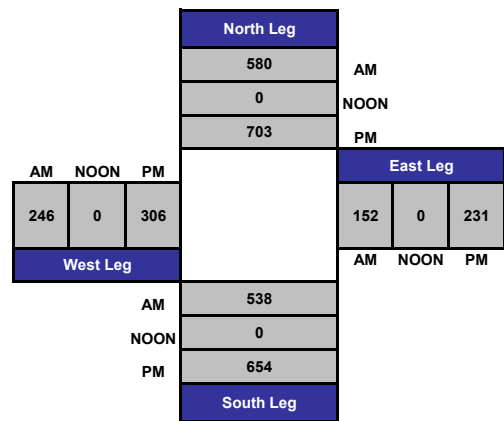
Project #: 17-6050-017  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg





# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

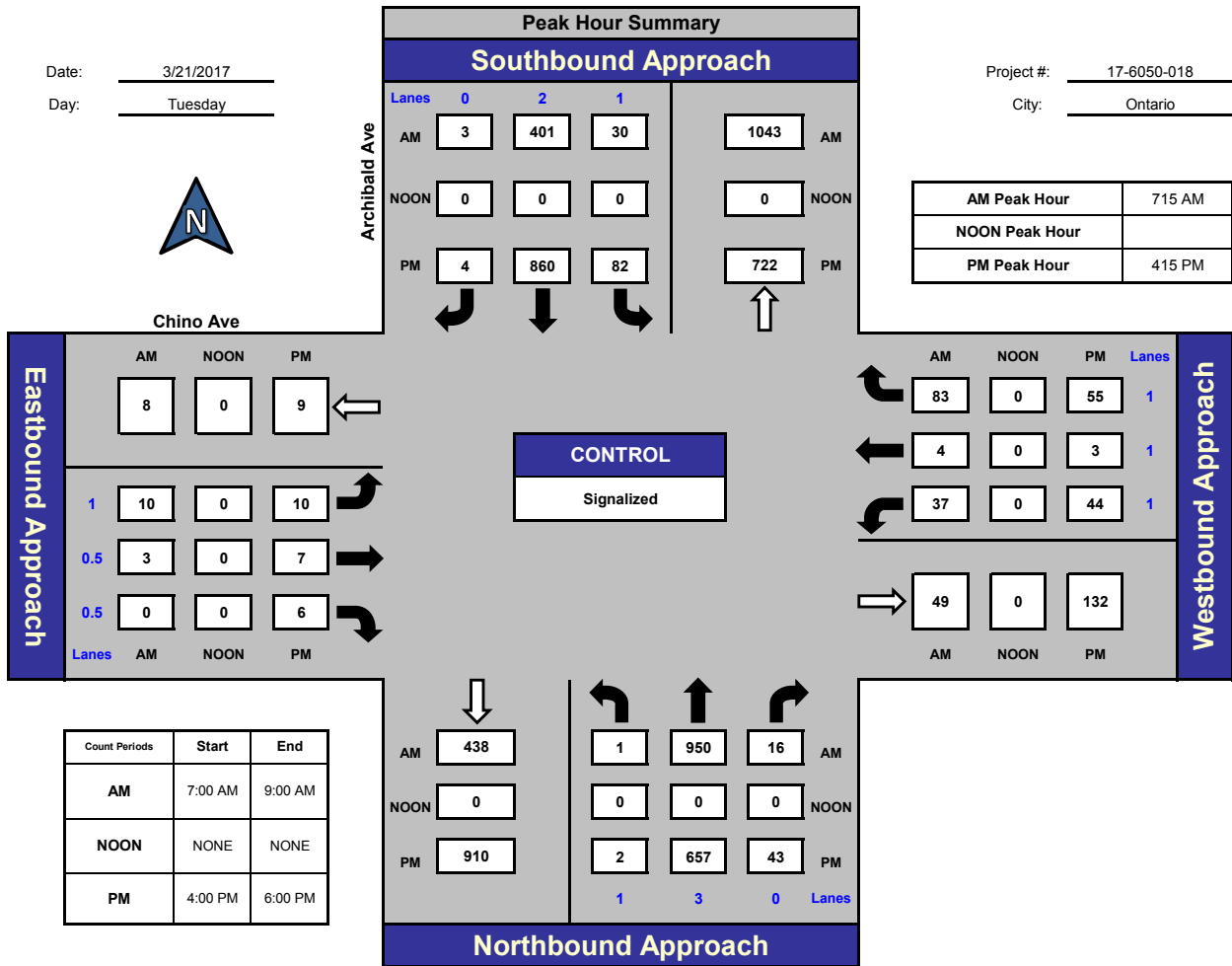
## Archibald Ave and Chino Ave, Ontario

Date: 3/21/2017

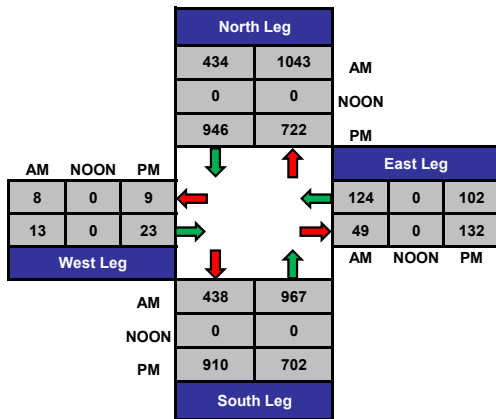
Day: Tuesday

Project #: 17-6050-018

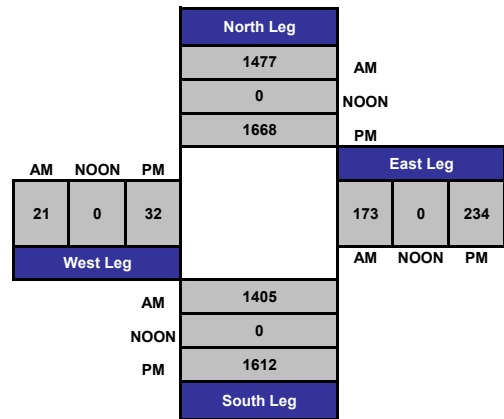
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

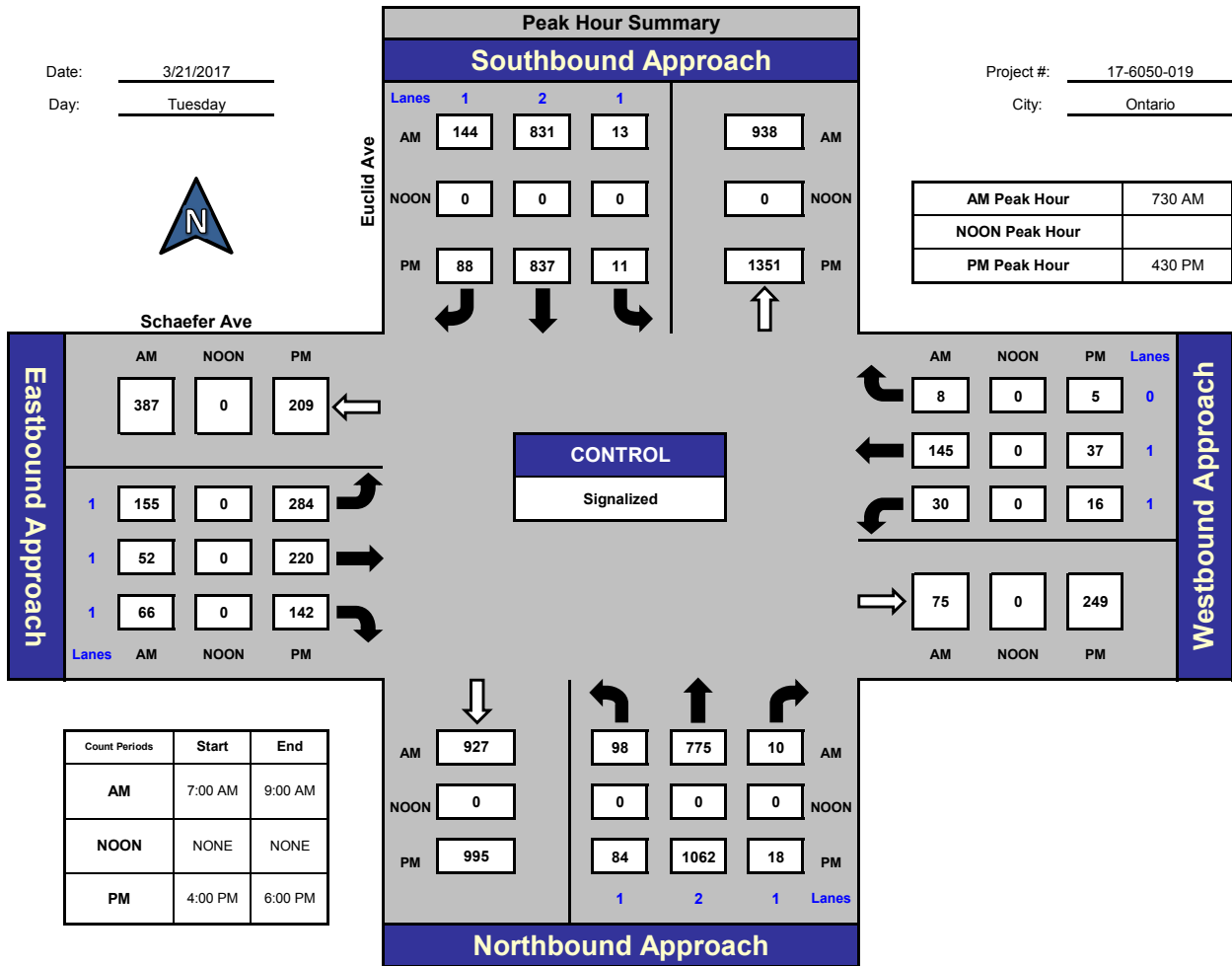
## Euclid Ave and Schaefer Ave, Ontario

Date: 3/21/2017

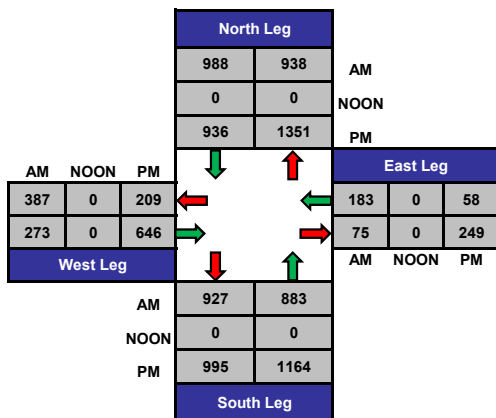
Day: Tuesday

Project #: 17-6050-019

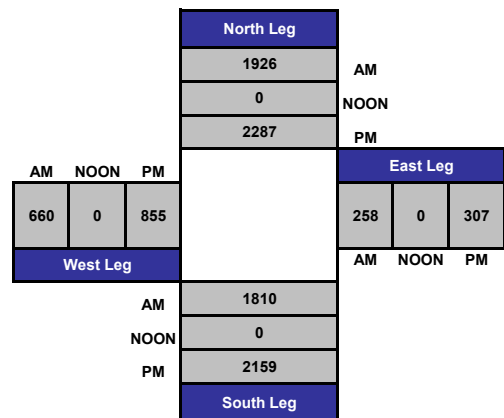
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

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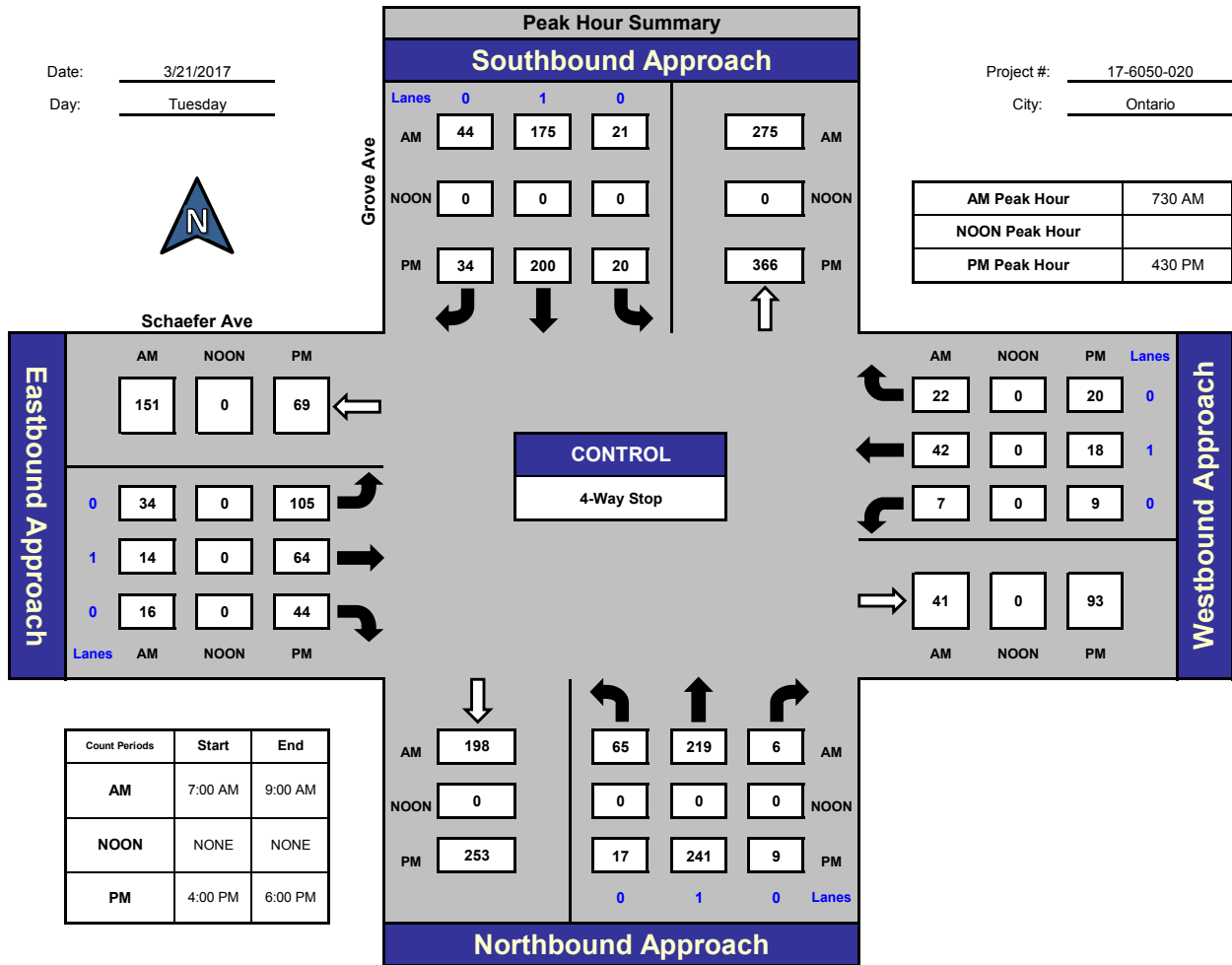


National Data & Surveying Services

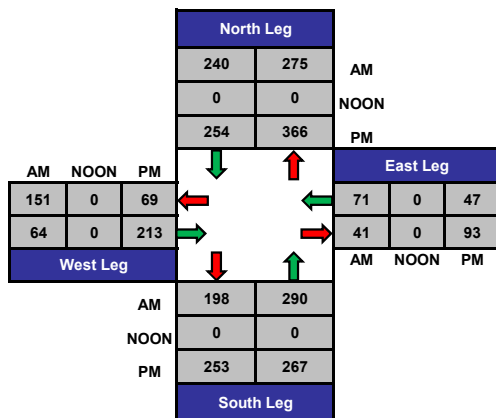
## Grove Ave and Schaefer Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

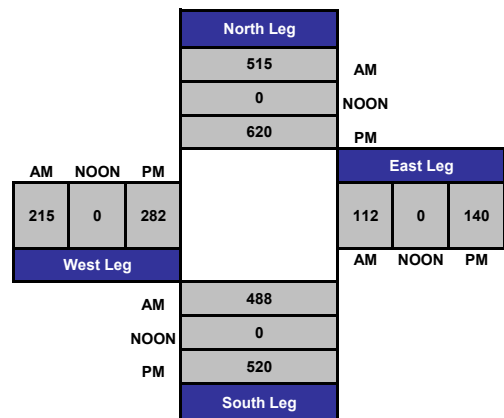
Project #: 17-6050-020  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

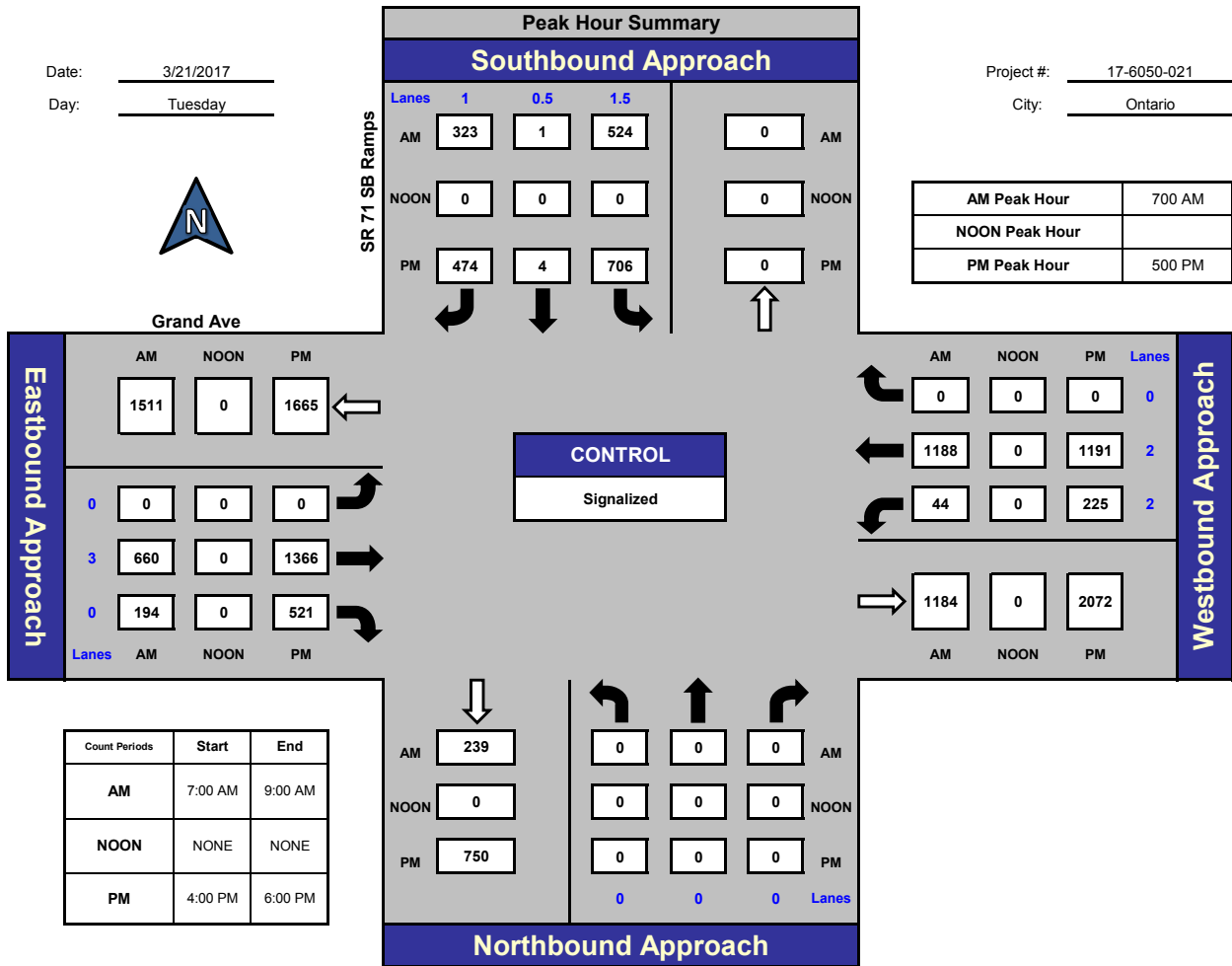
## SR 71 SB Ramps and Grand Ave., Ontario

Date: 3/21/2017

Day: Tuesday

Project #: 17-6050-021

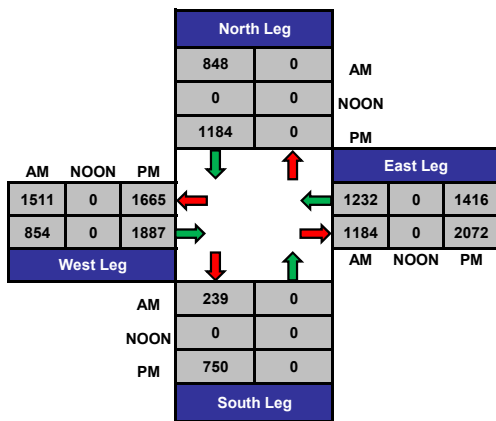
City: Ontario



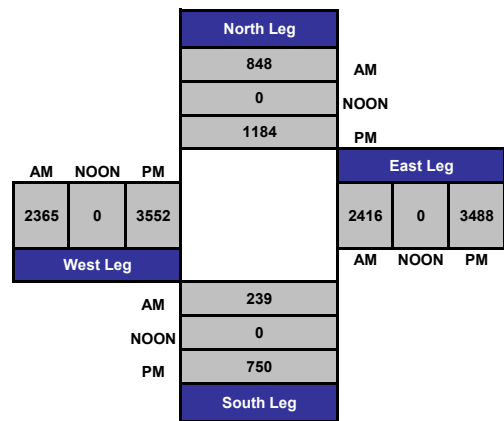
AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

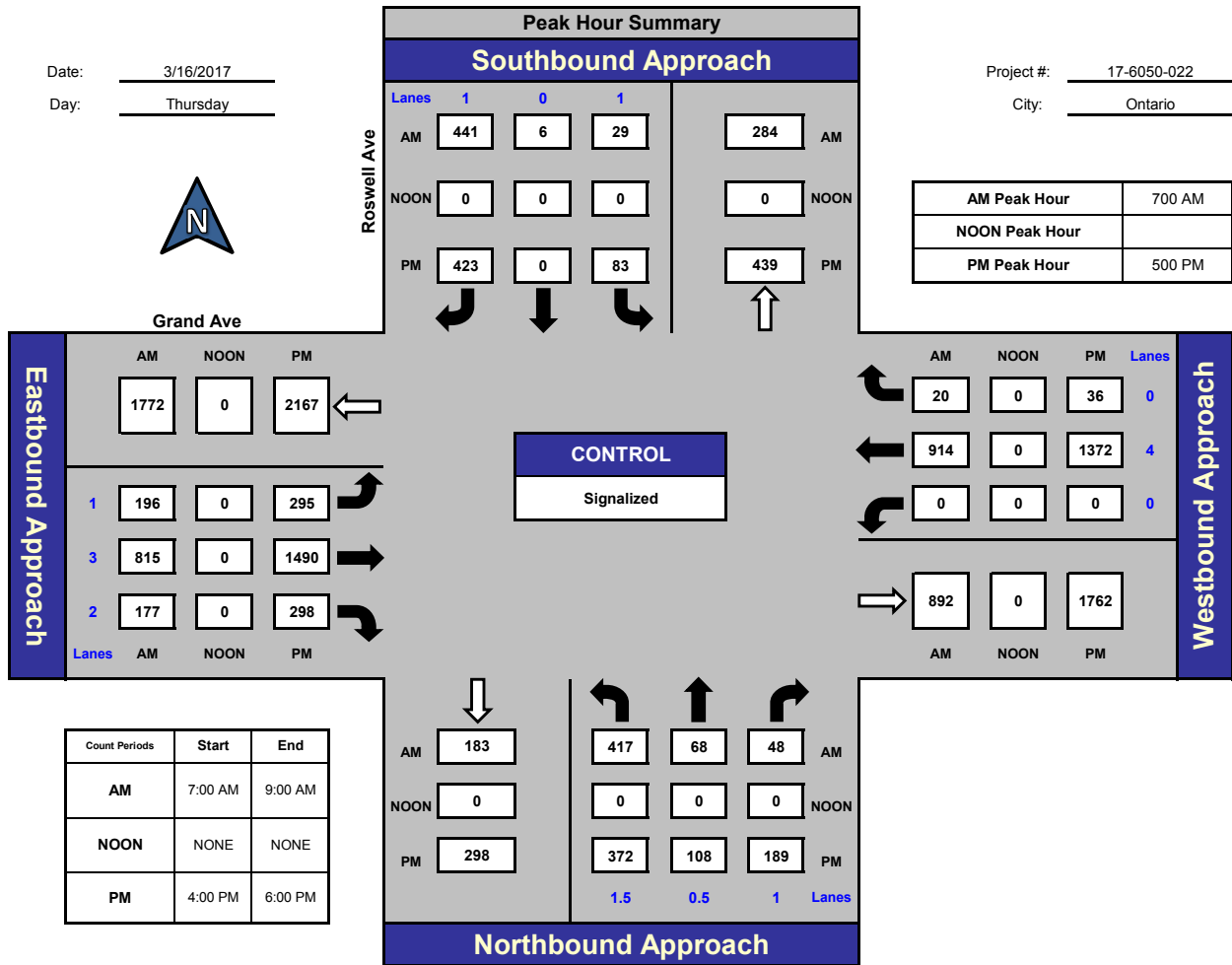


National Data & Surveying Services

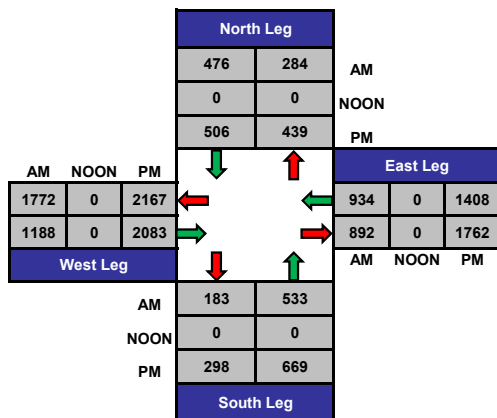
## Roswell Ave and Grand Ave., Ontario

Date: 3/16/2017  
Day: Thursday

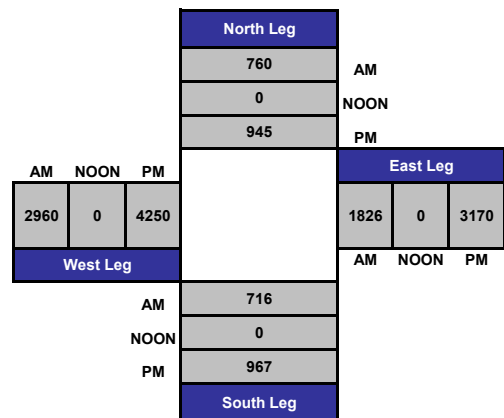
Project #: 17-6050-022  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

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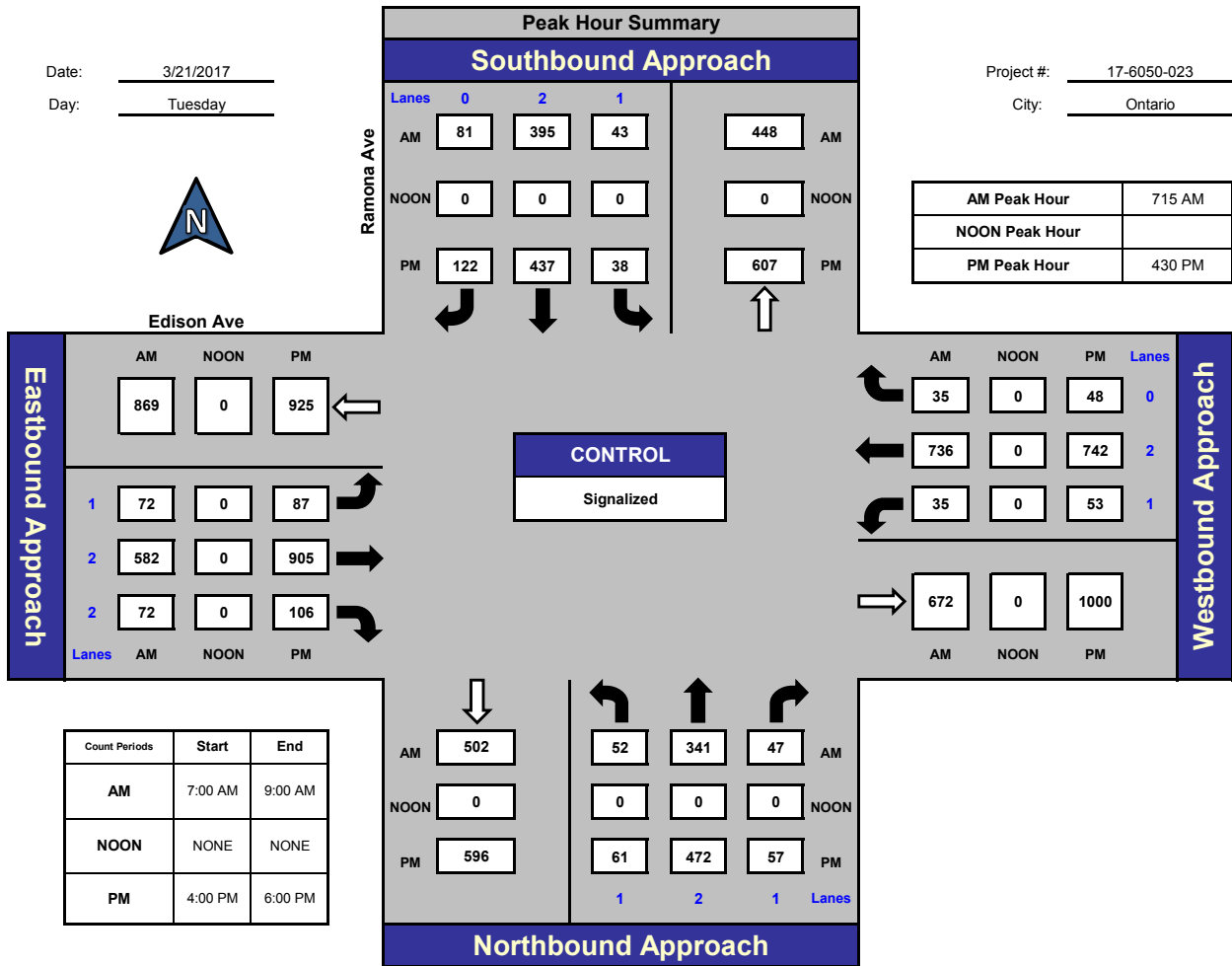


National Data & Surveying Services

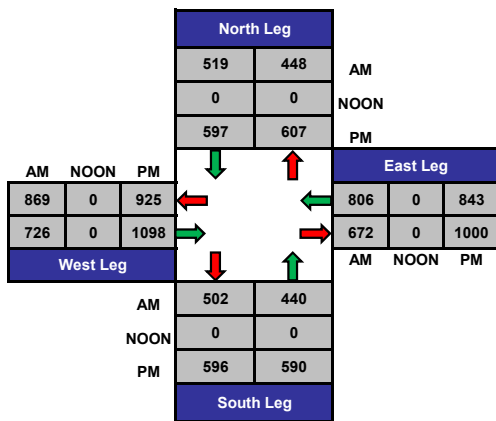
## Ramona Ave and Edison Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

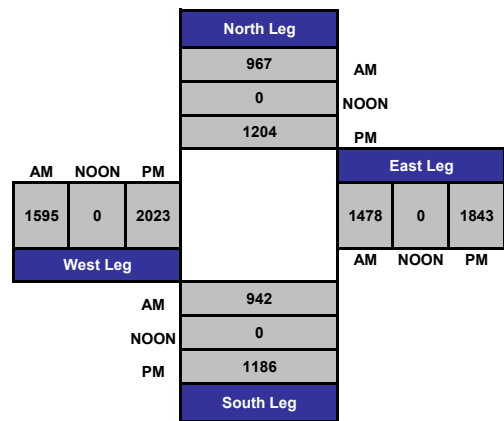
Project #: 17-6050-023  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

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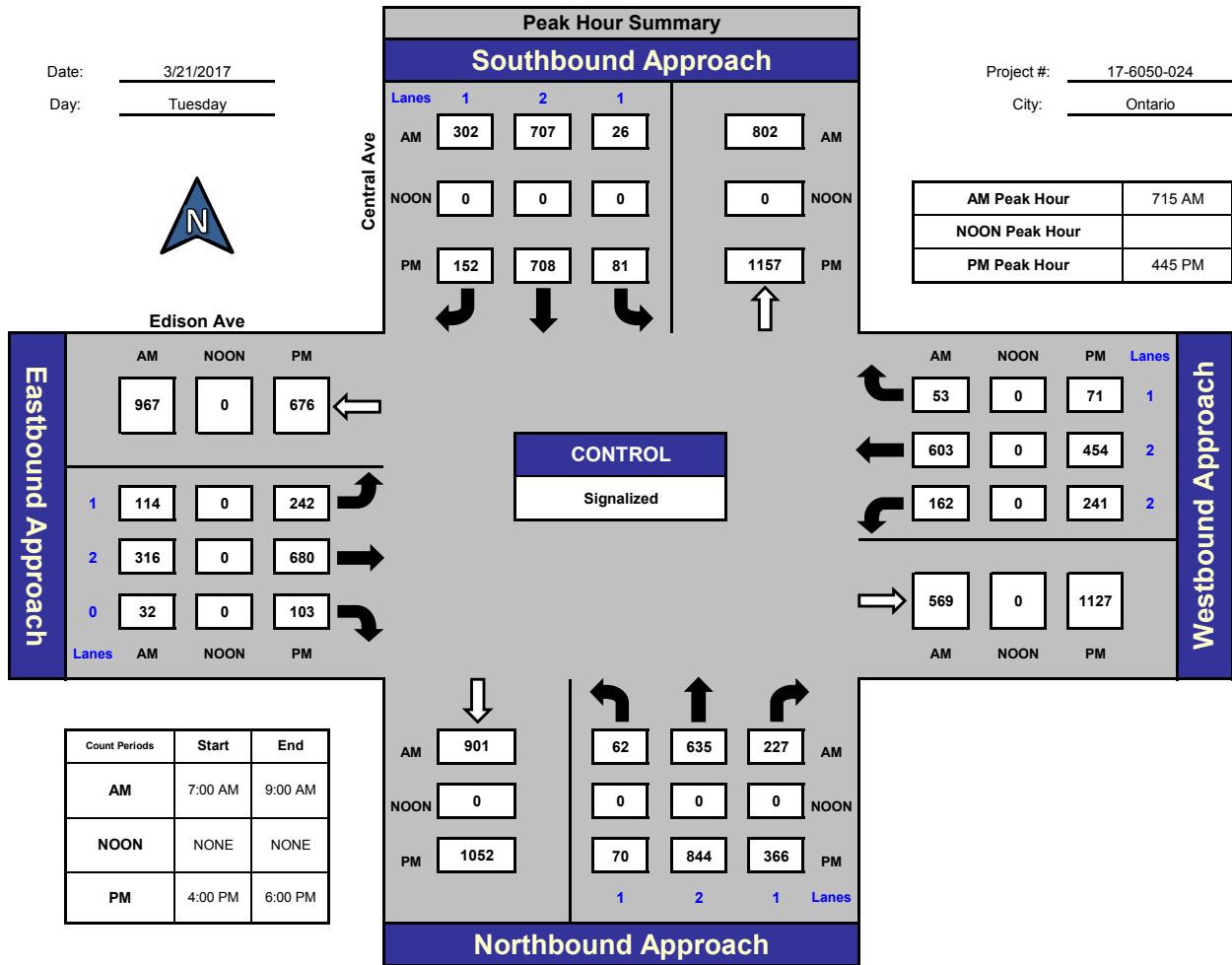


National Data & Surveying Services

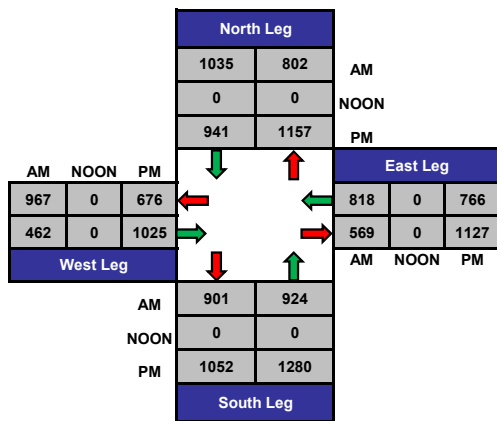
## Central Ave and Edison Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

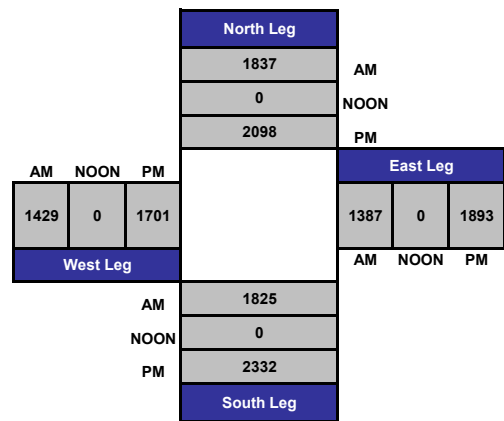
Project #: 17-6050-024  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

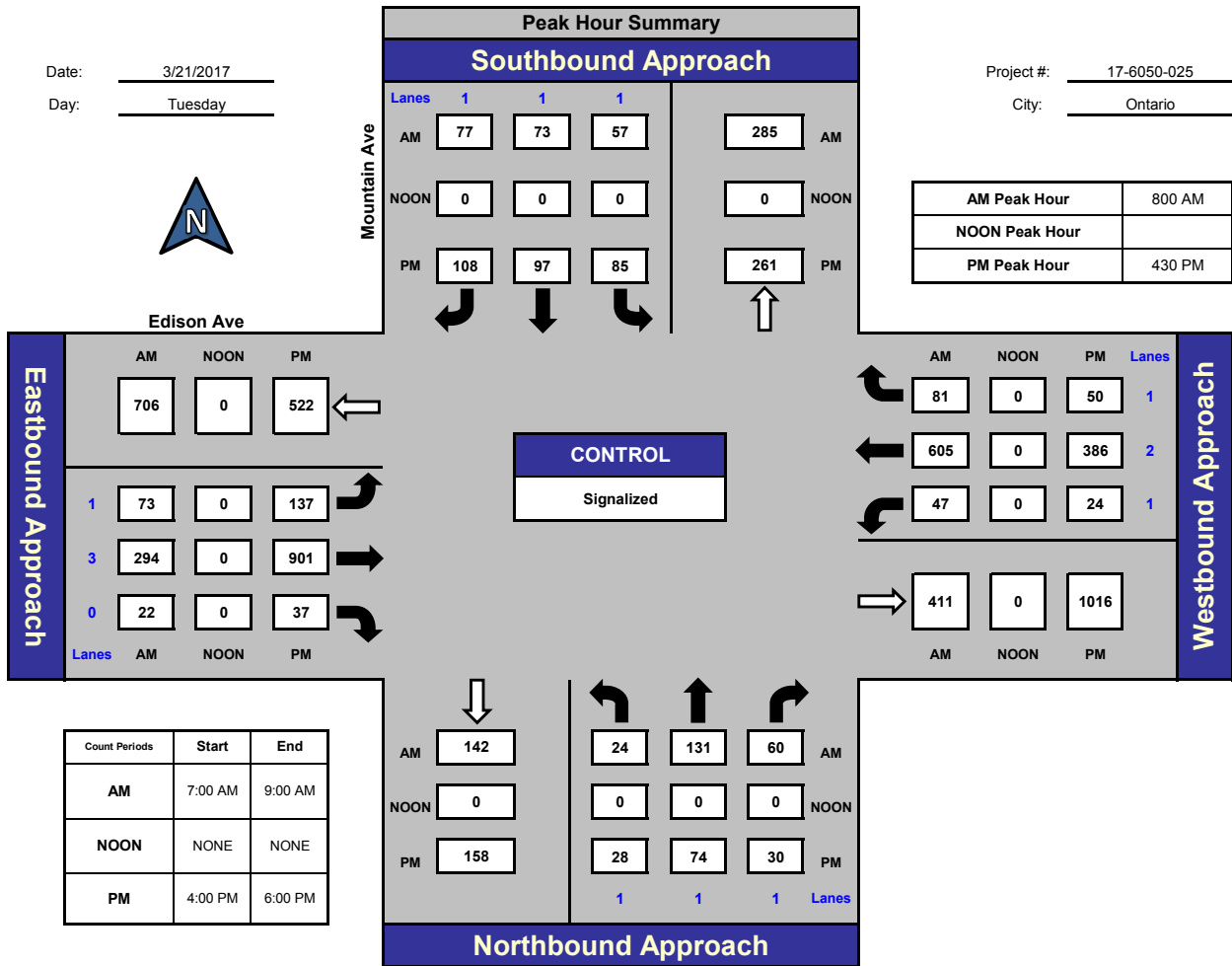


National Data & Surveying Services

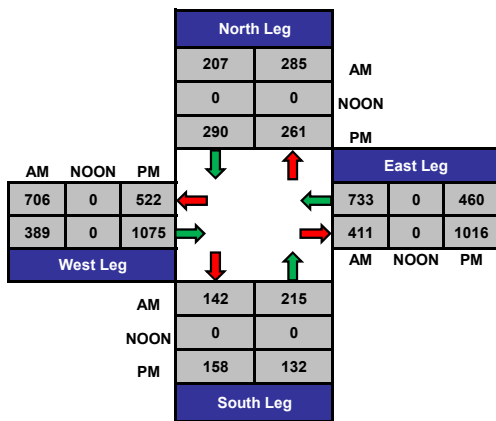
## Mountain Ave and Edison Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

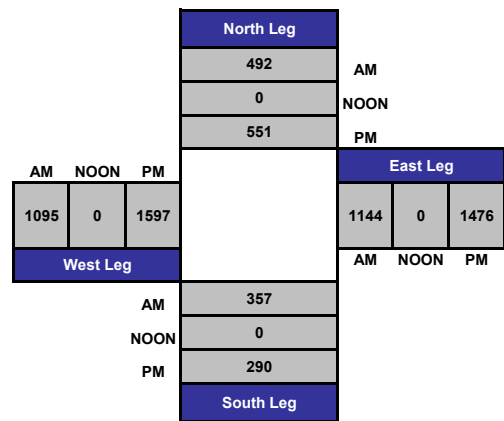
Project #: 17-6050-025  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg





# ITM Peak Hour Summary

Prepared by:

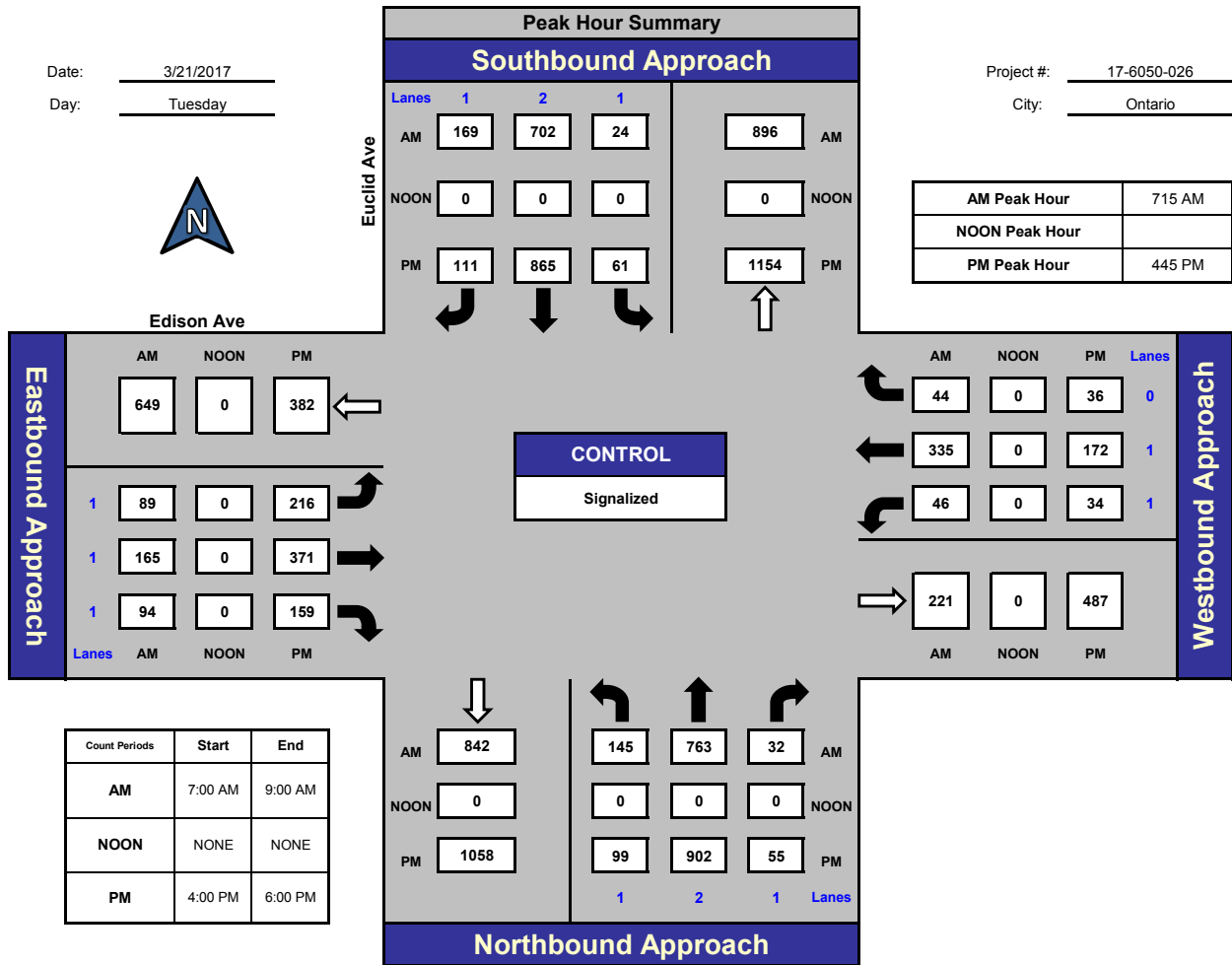


National Data & Surveying Services

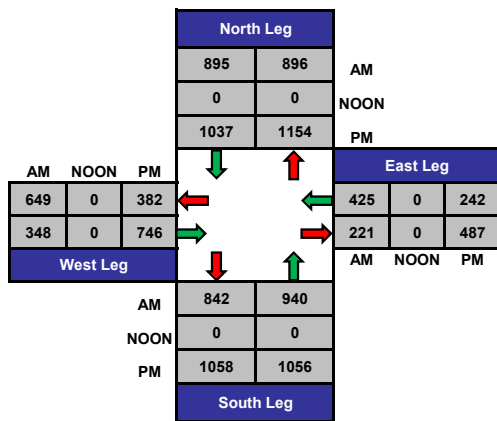
## Euclid Ave and Edison Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

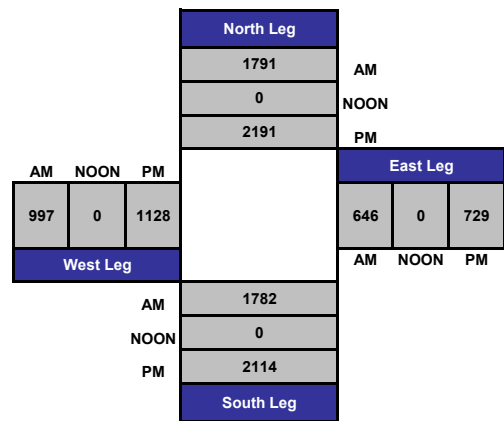
Project #: 17-6050-026  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

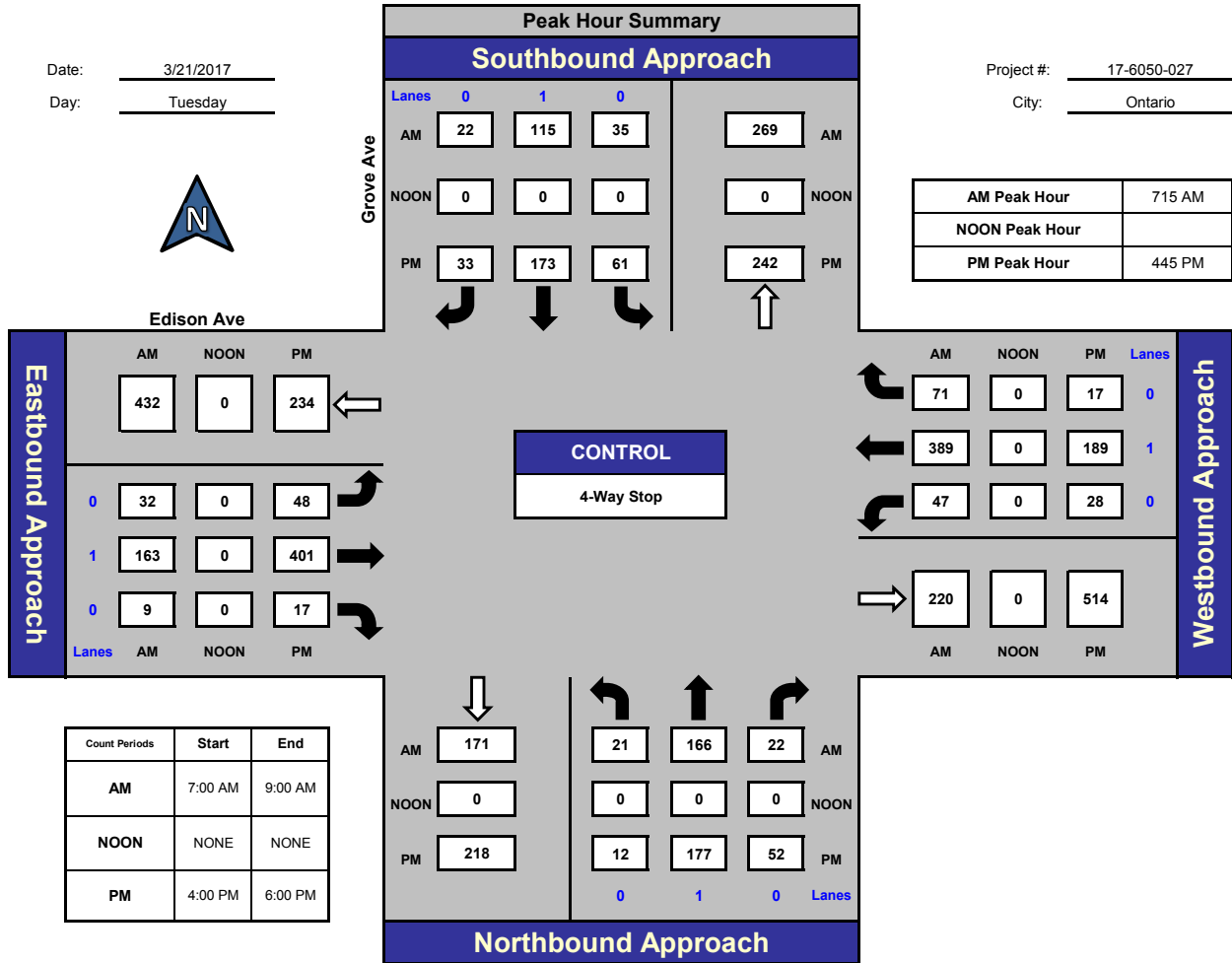
## Grove Ave and Edison Ave, Ontario

Date: 3/21/2017

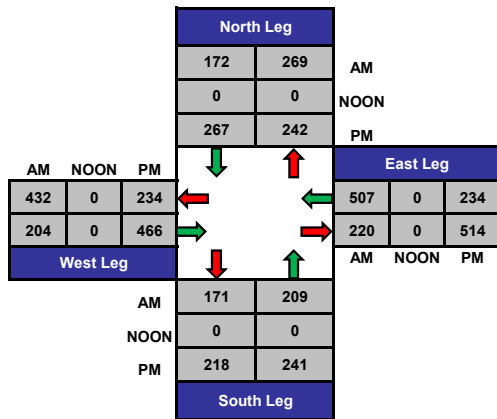
Day: Tuesday

Project #: 17-6050-027

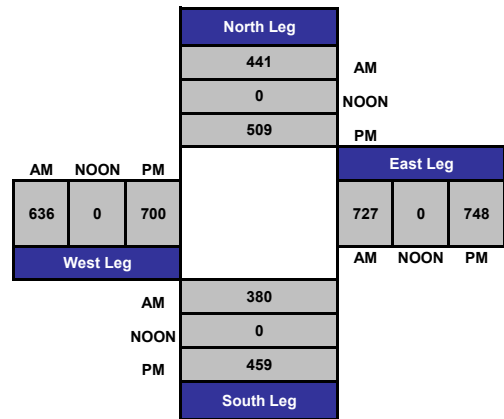
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

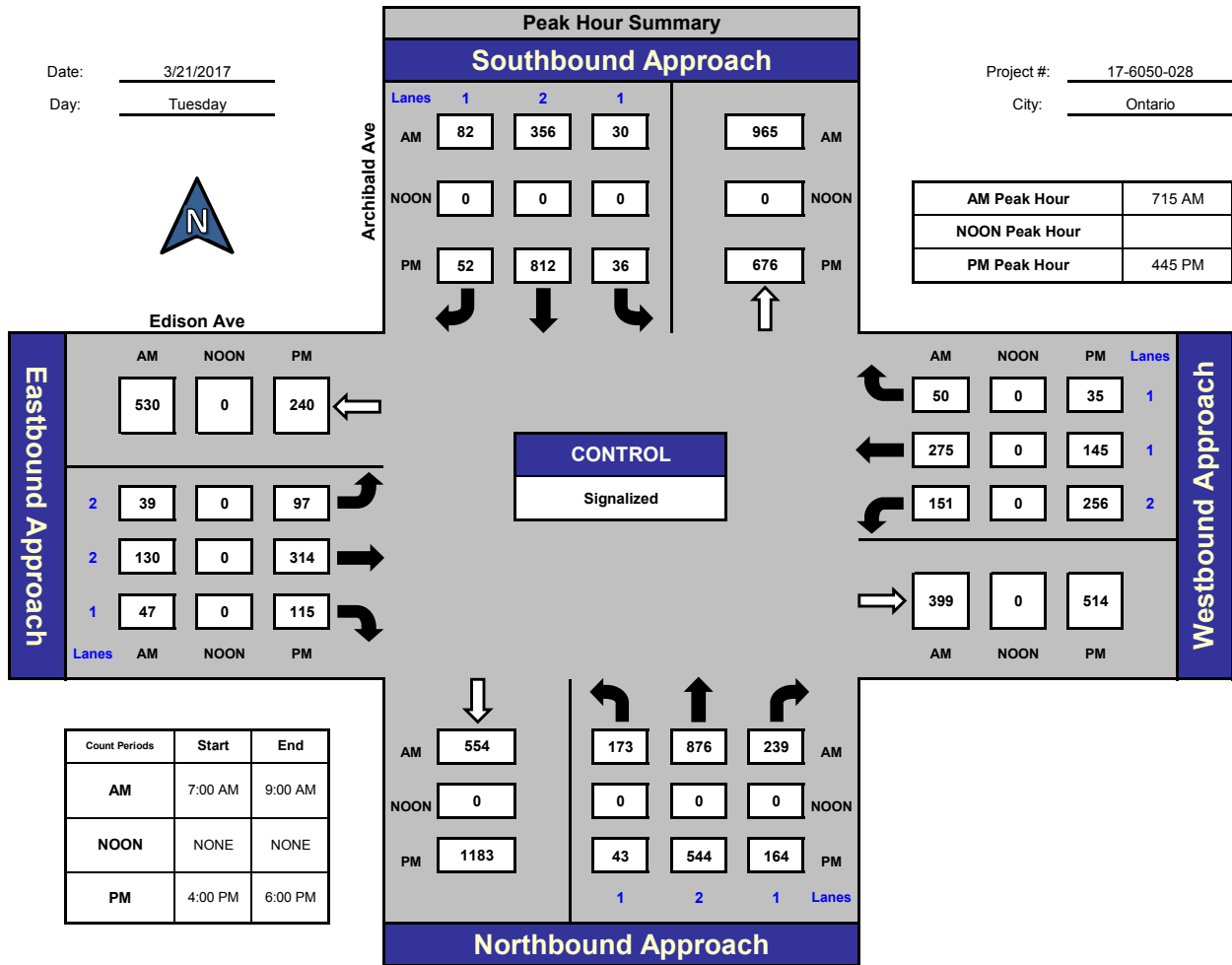


National Data & Surveying Services

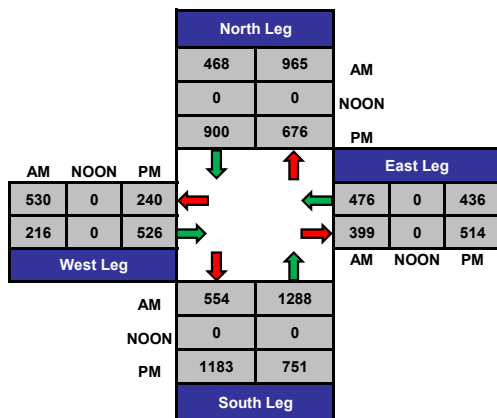
## Archibald Ave and Edison Ave., Ontario

Date: 3/21/2017  
Day: Tuesday

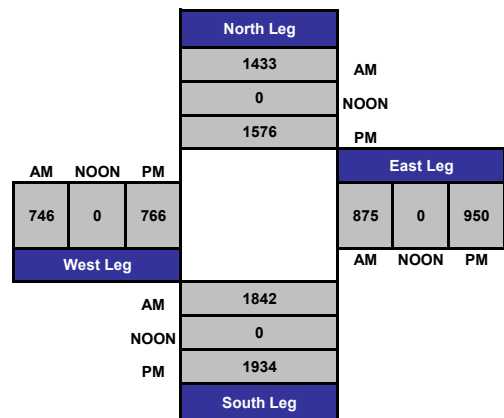
Project #: 17-6050-028  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

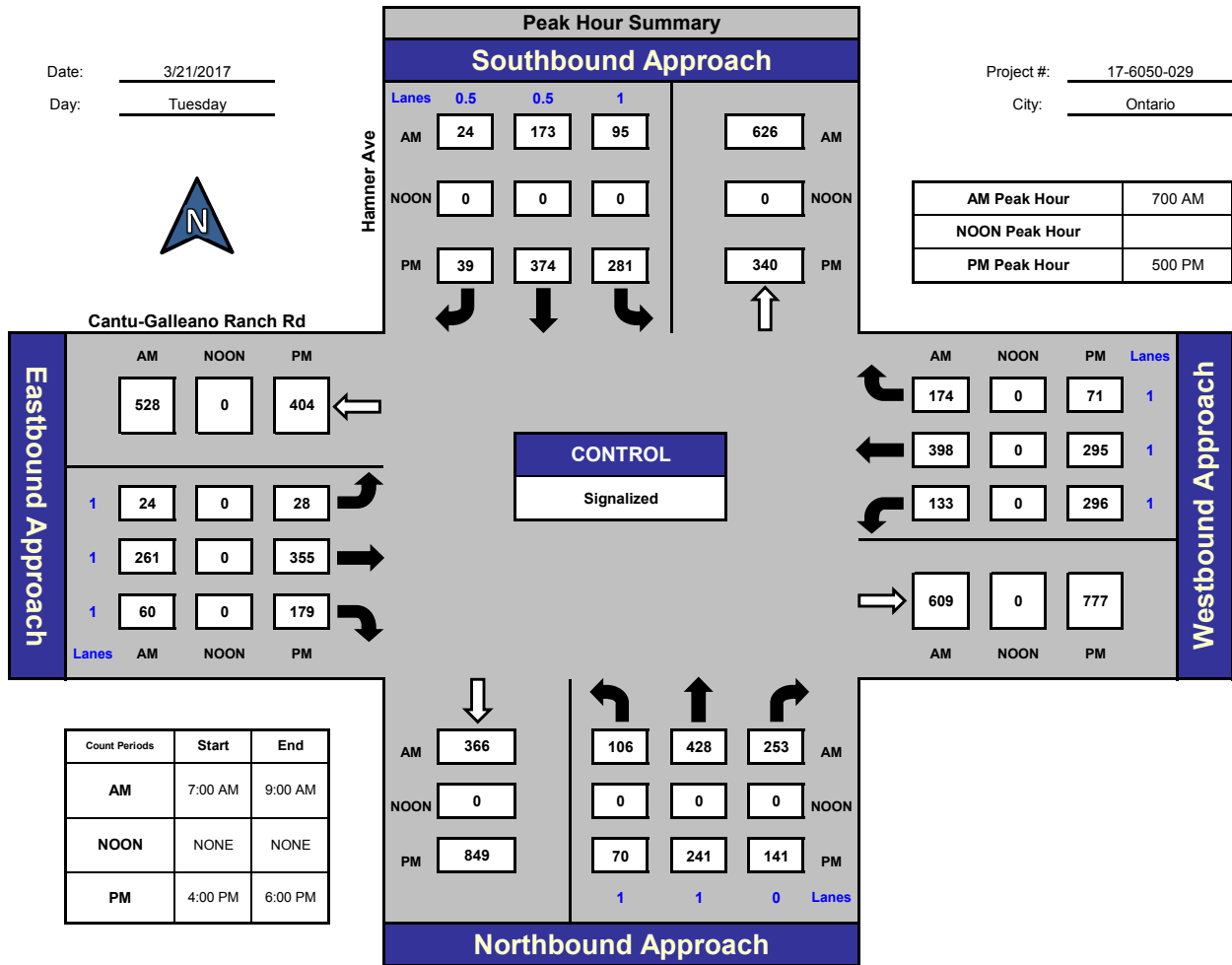


National Data & Surveying Services

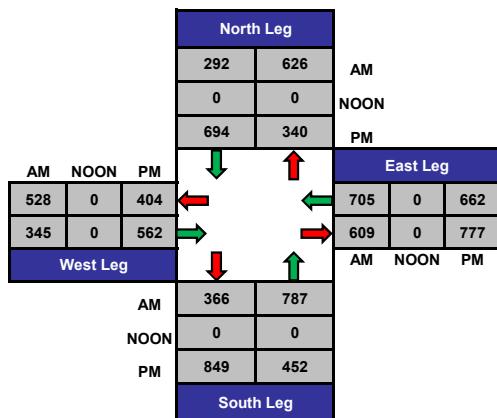
## Hamner Ave and Cantu-Galleano Ranch Rd , Ontario

Date: 3/21/2017  
Day: Tuesday

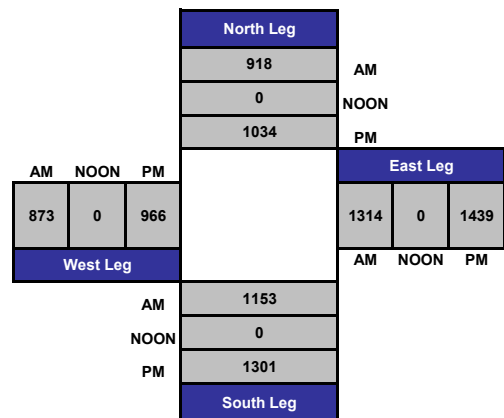
Project #: 17-6050-029  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

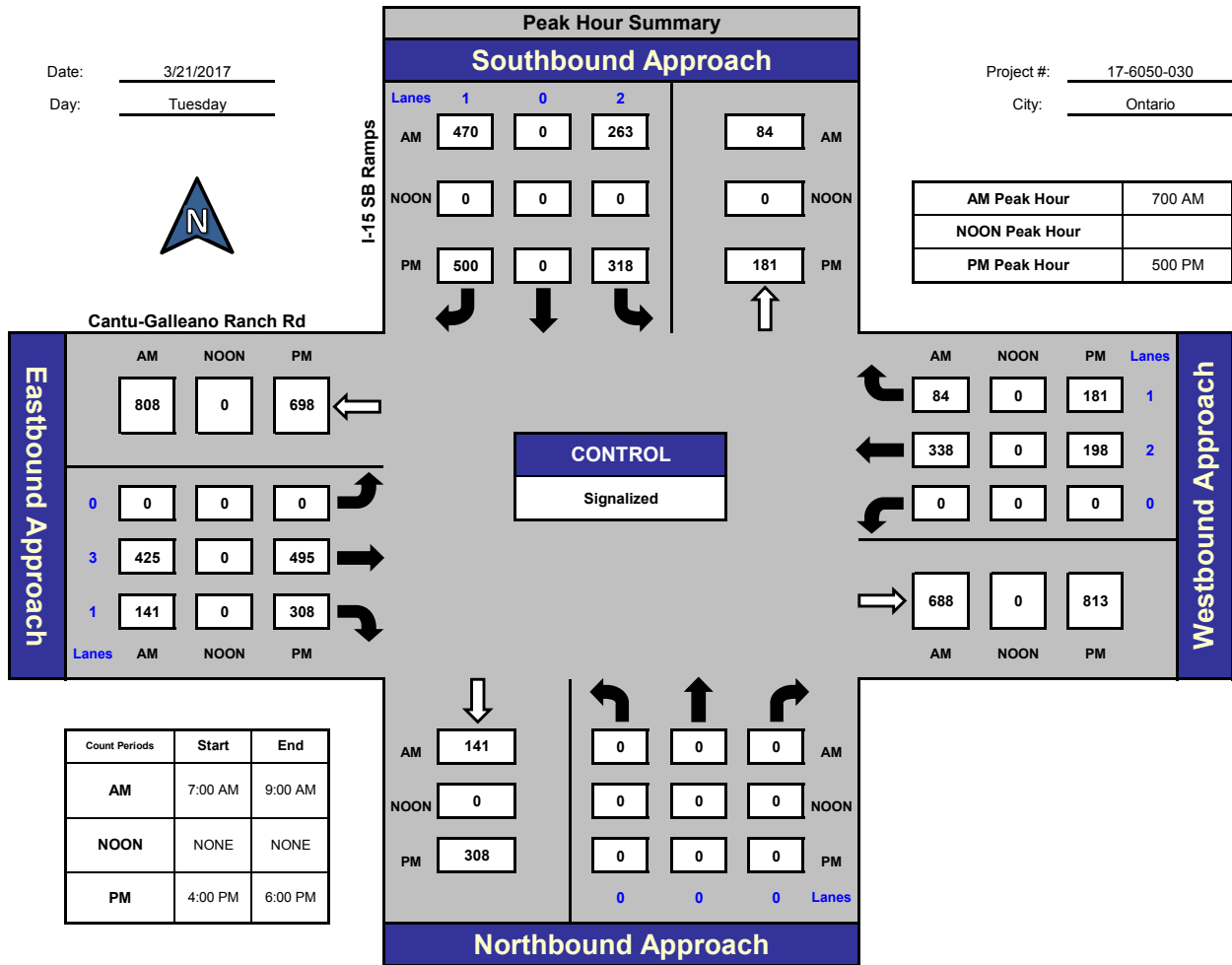


National Data & Surveying Services

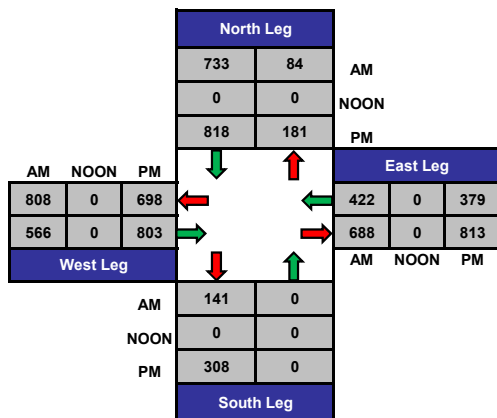
## I-15 SB Ramps and Cantu-Galleano Ranch Rd, Ontario

Date: 3/21/2017  
Day: Tuesday

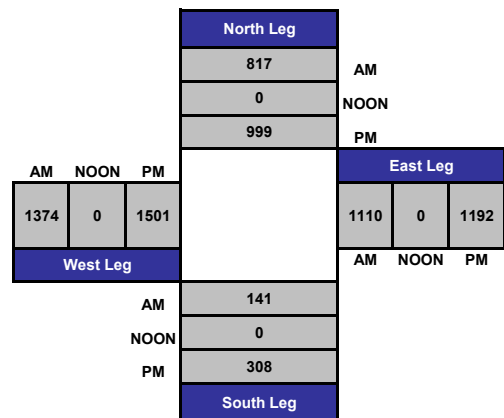
Project #: 17-6050-030  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

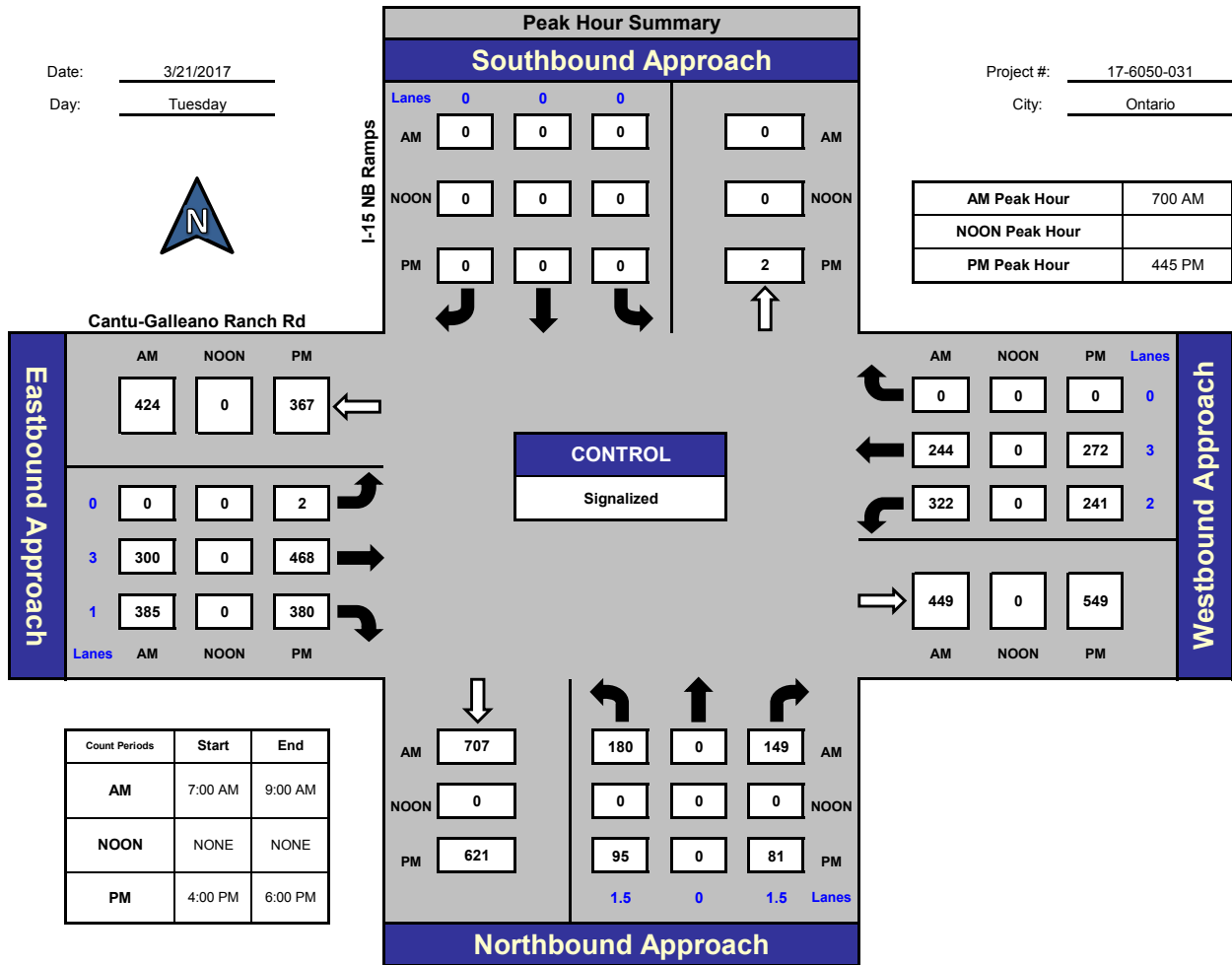


Prepared by:  
National Data & Surveying Services

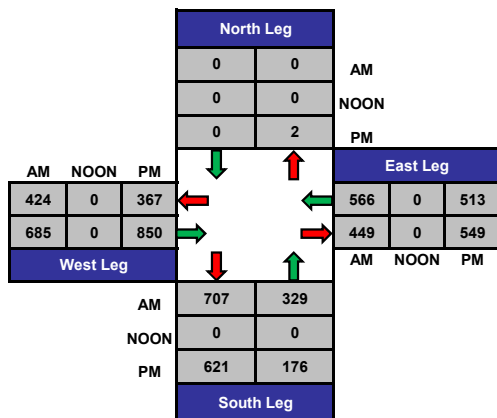
## I-15 NB Ramps and Cantu-Galleano Ranch Rd, Ontario

Date: 3/21/2017  
Day: Tuesday

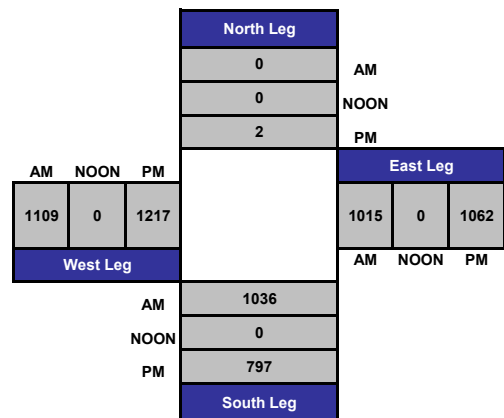
Project #: 17-6050-031  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

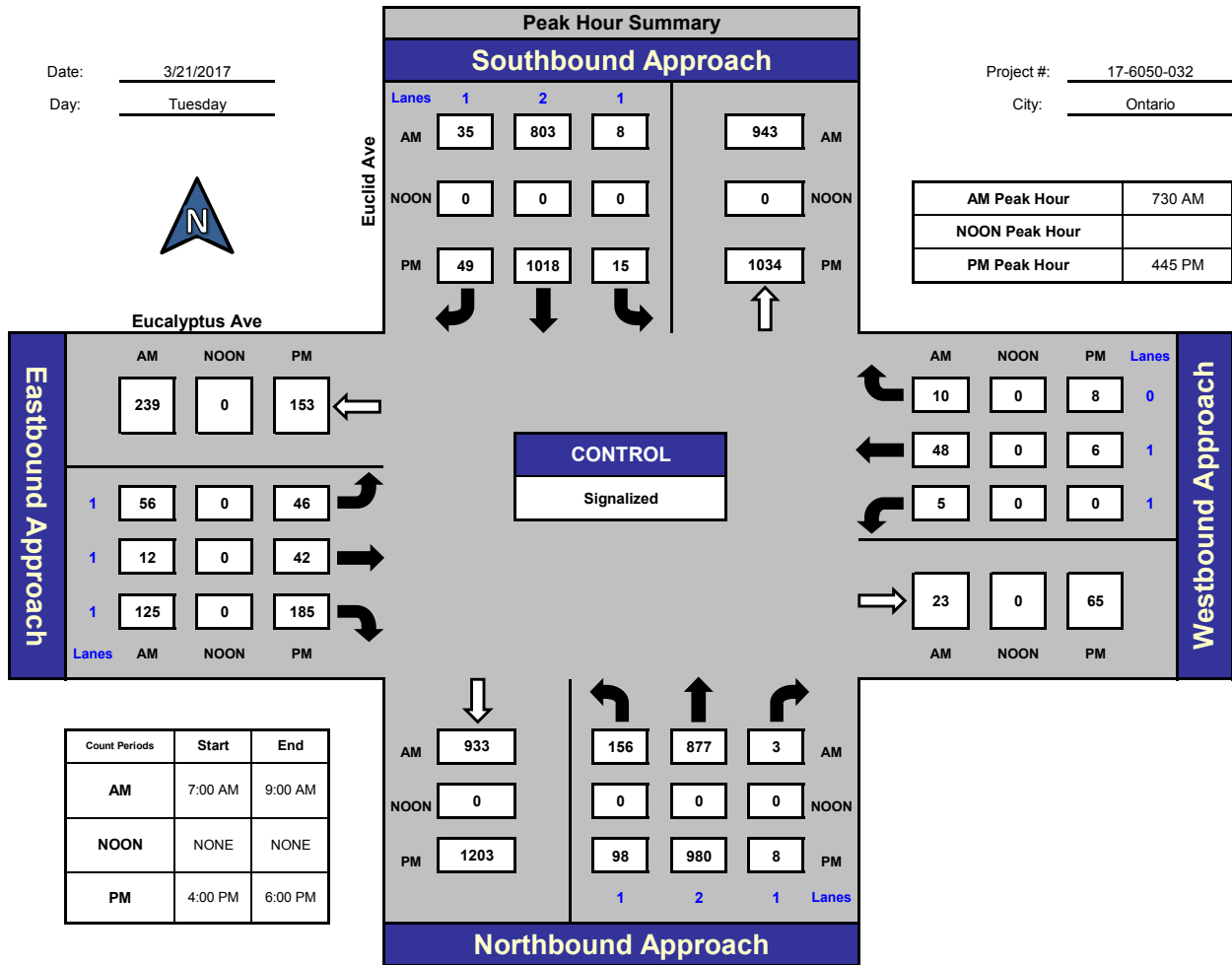


National Data & Surveying Services

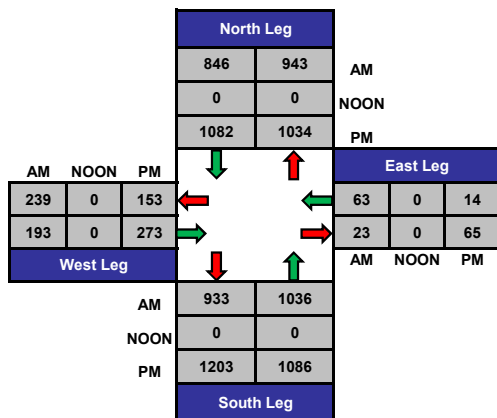
## Euclid Ave and Eucalyptus Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

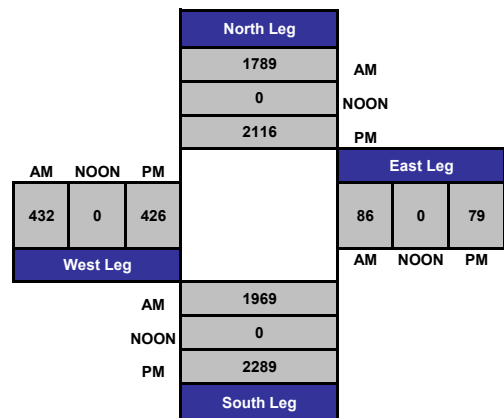
Project #: 17-6050-032  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

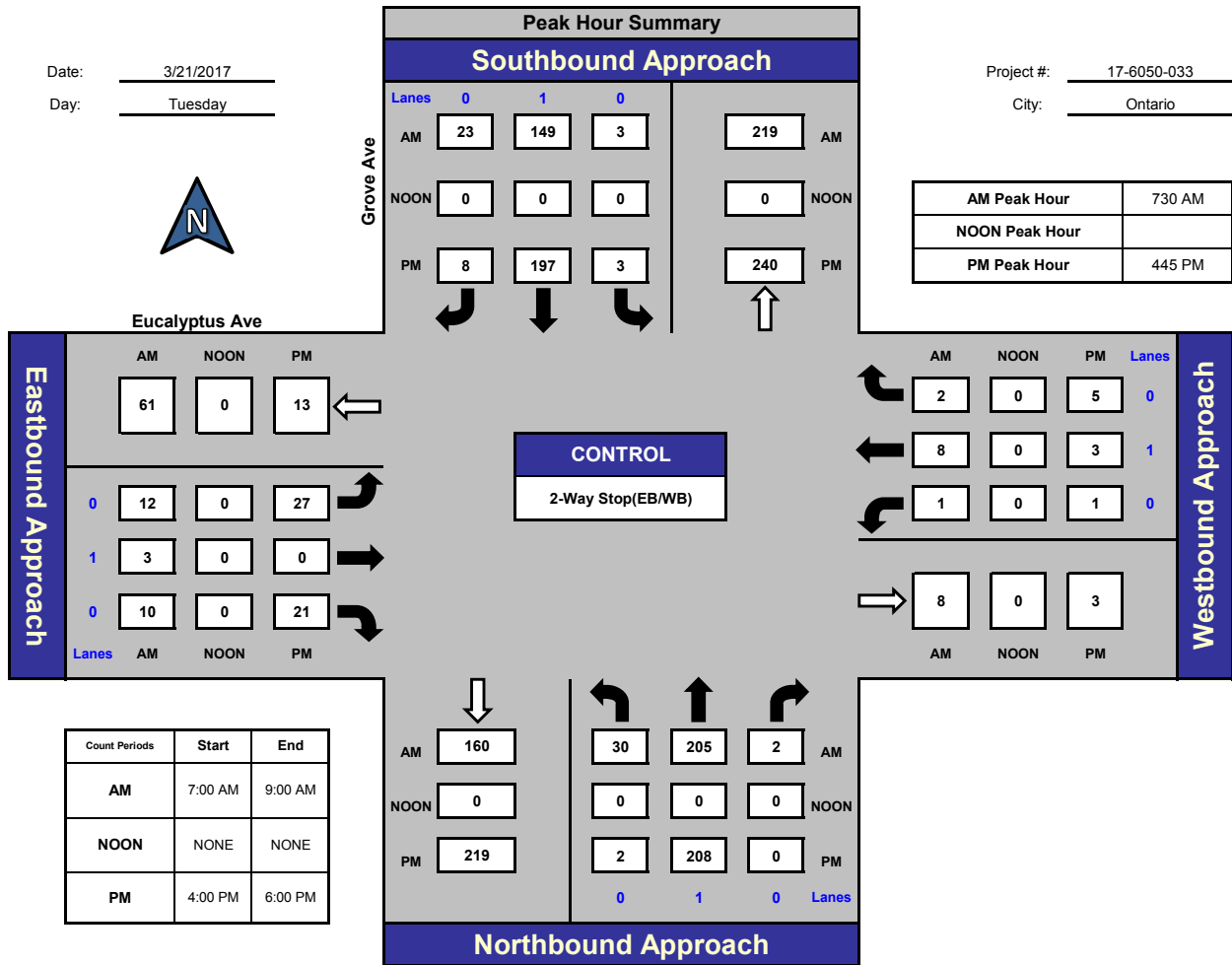


National Data & Surveying Services

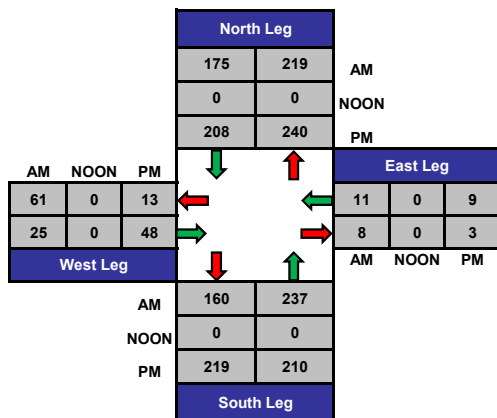
## Grove Ave and Eucalyptus Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

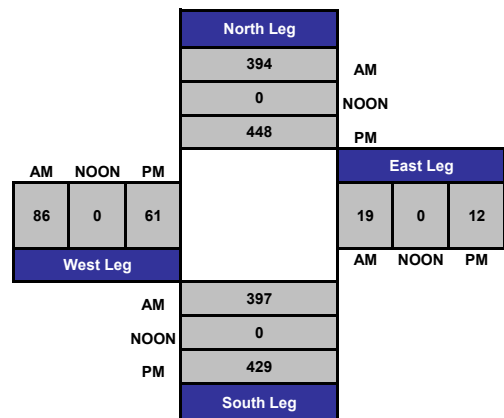
Project #: 17-6050-033  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg





# ITM Peak Hour Summary

Prepared by:

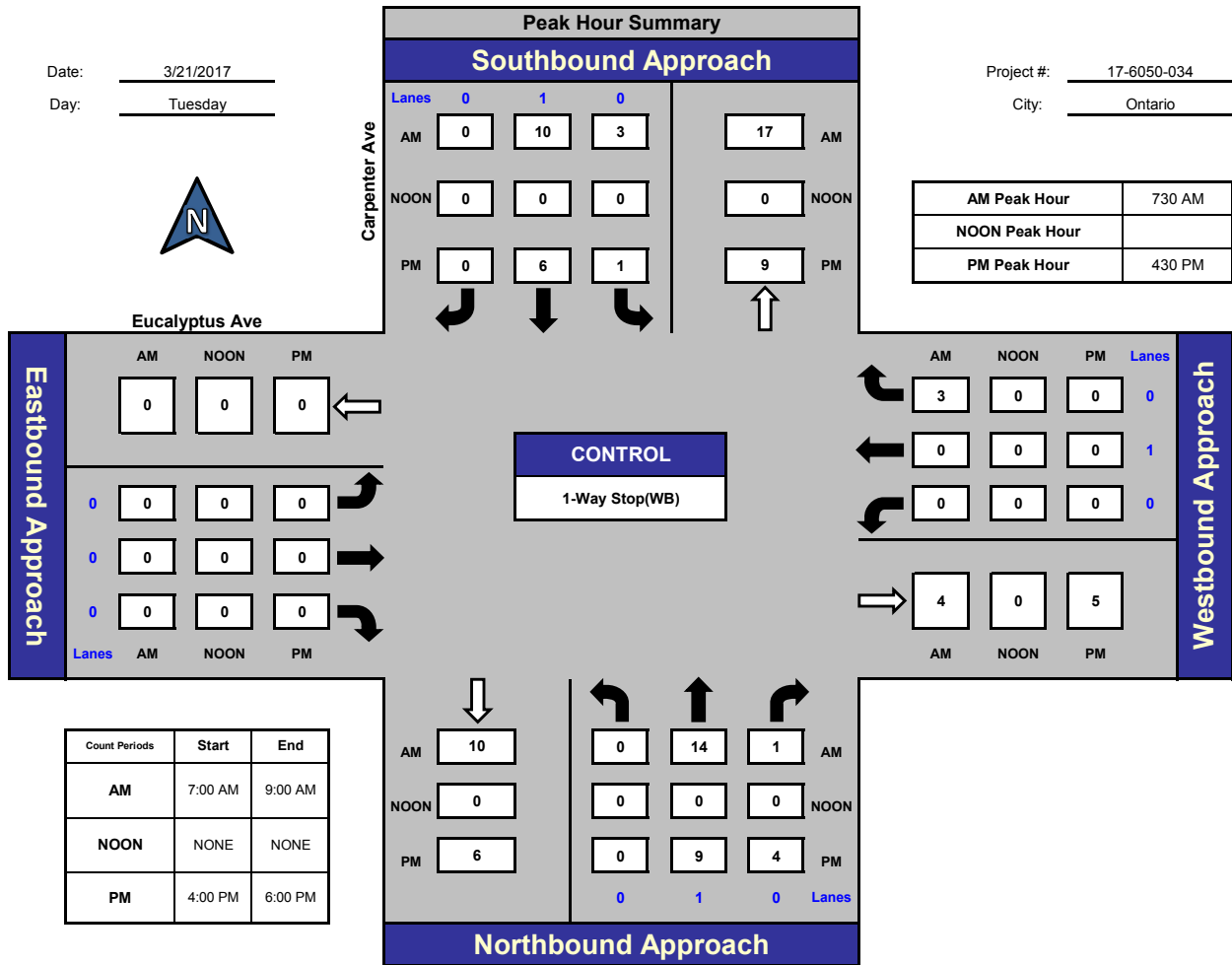


National Data & Surveying Services

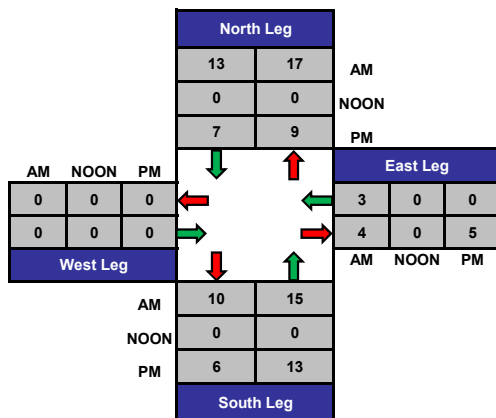
## Carpenter Ave and Eucalyptus Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

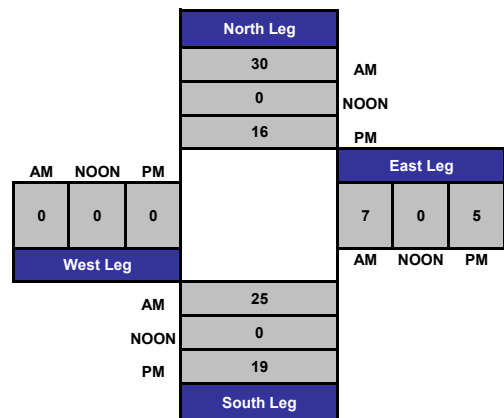
Project #: 17-6050-034  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

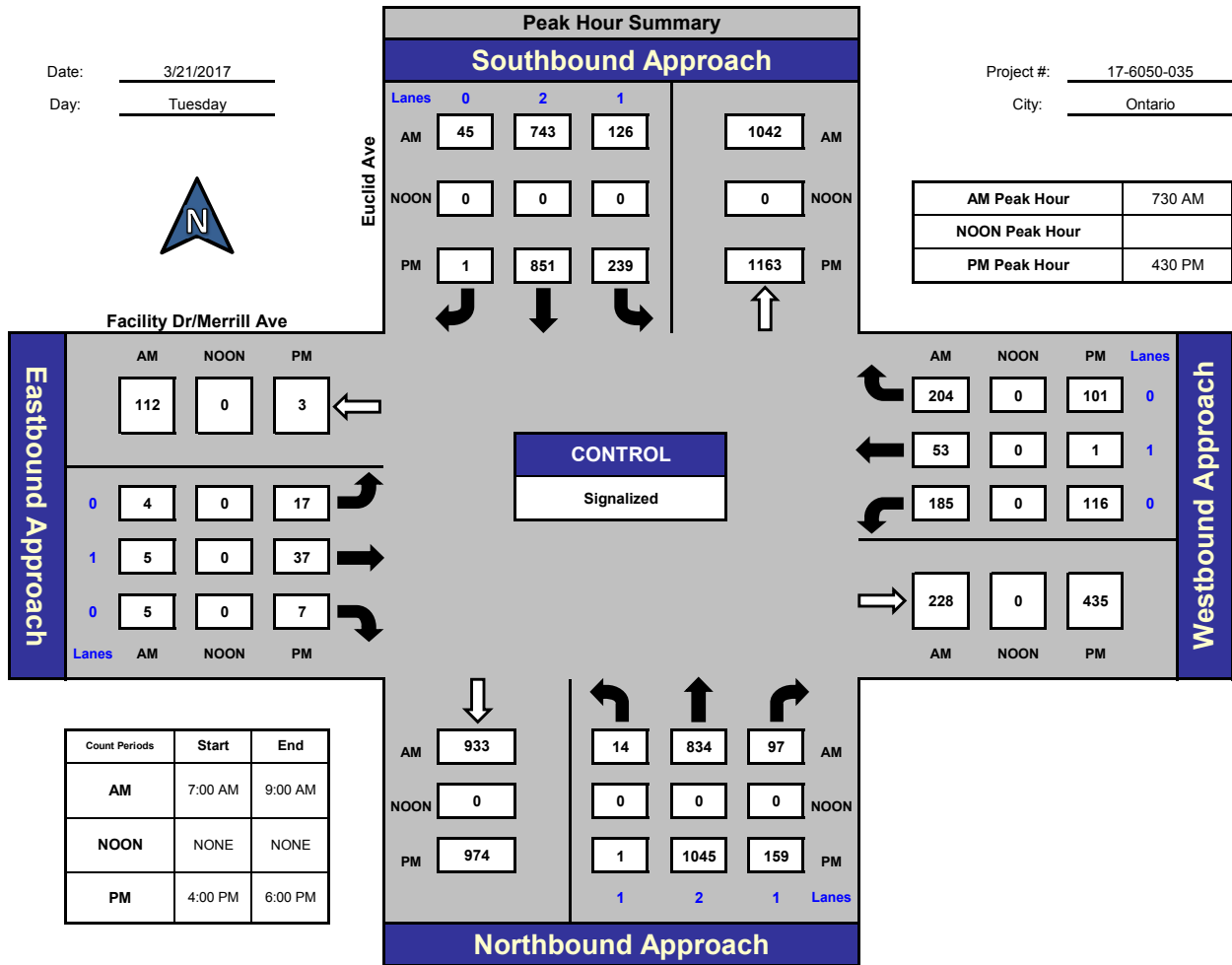


Prepared by:  
National Data & Surveying Services

## Euclid Ave and Facility Dr/Merrill Ave, Ontario

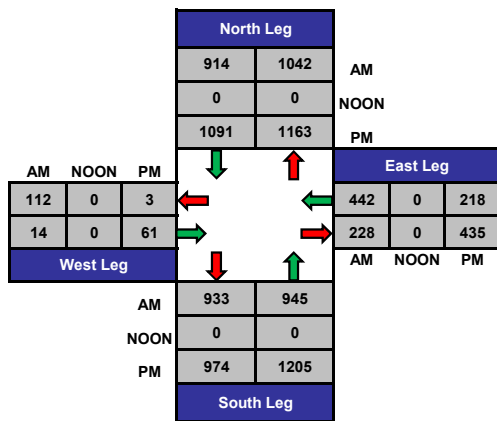
Date: 3/21/2017  
Day: Tuesday

Project #: 17-6050-035  
City: Ontario

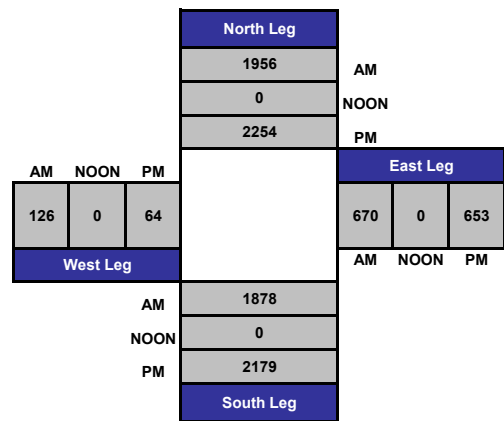


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

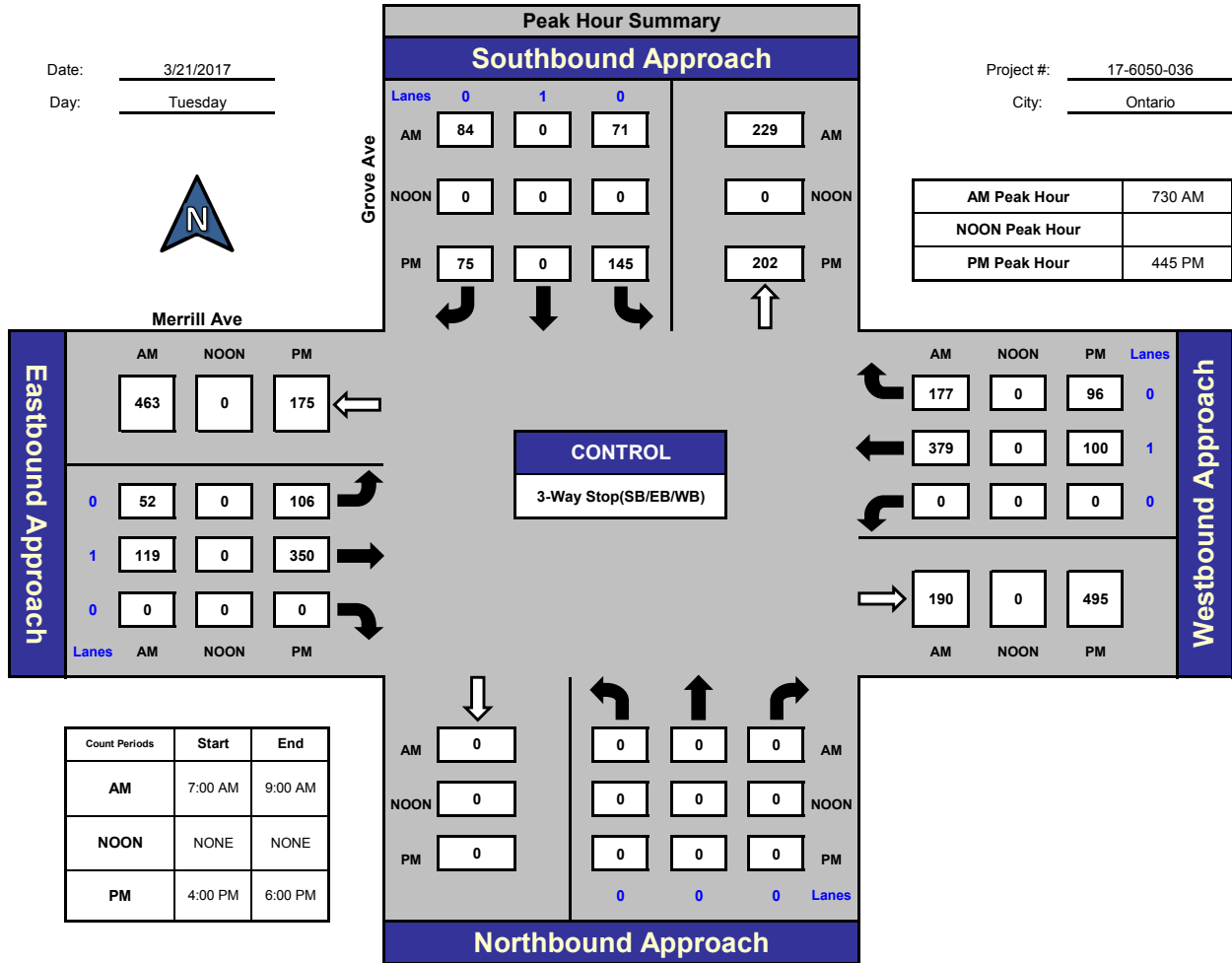
## Grove Ave and Merrill Ave , Ontario

Date: 3/21/2017

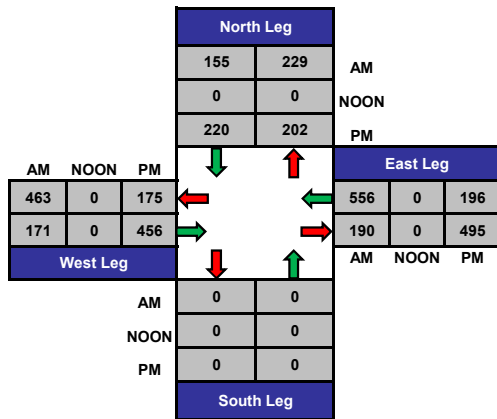
Day: Tuesday

Project #: 17-6050-036

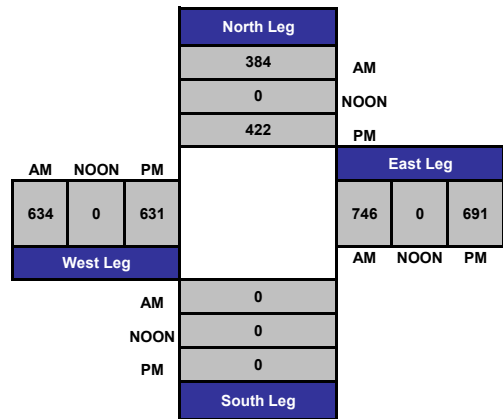
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

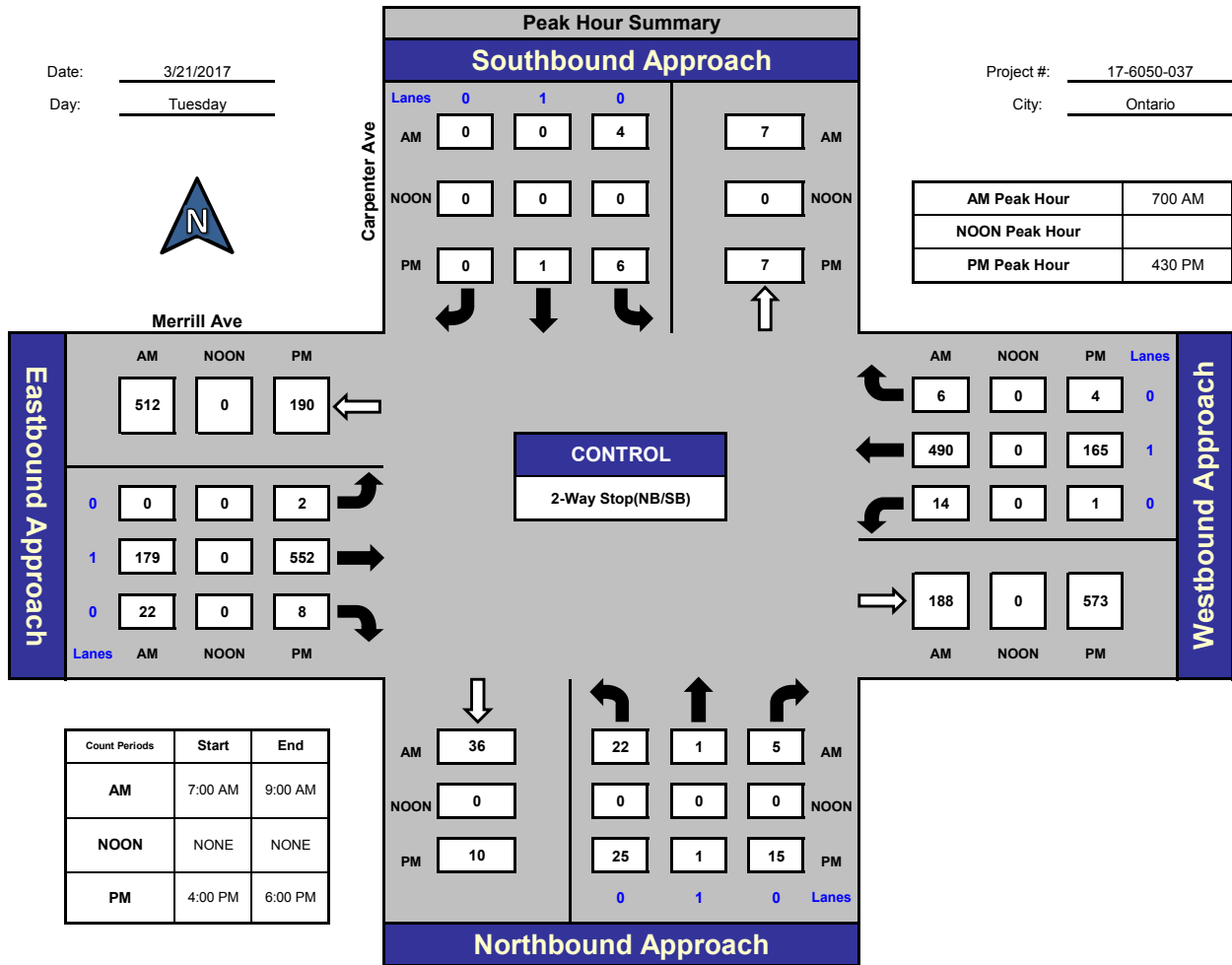


National Data & Surveying Services

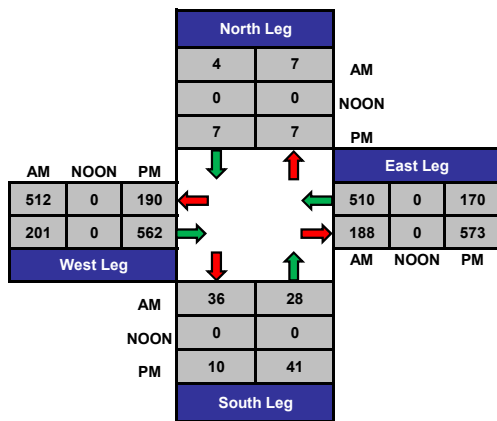
## Carpenter Ave and Merrill Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

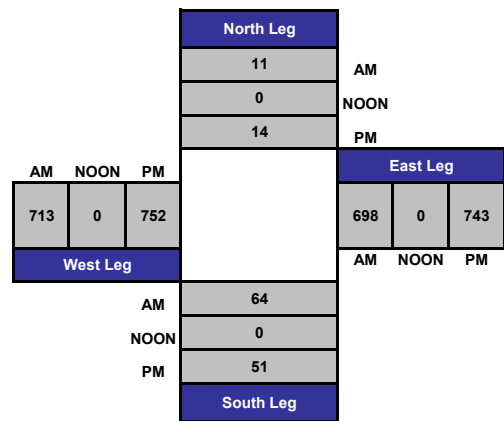
Project #: 17-6050-037  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

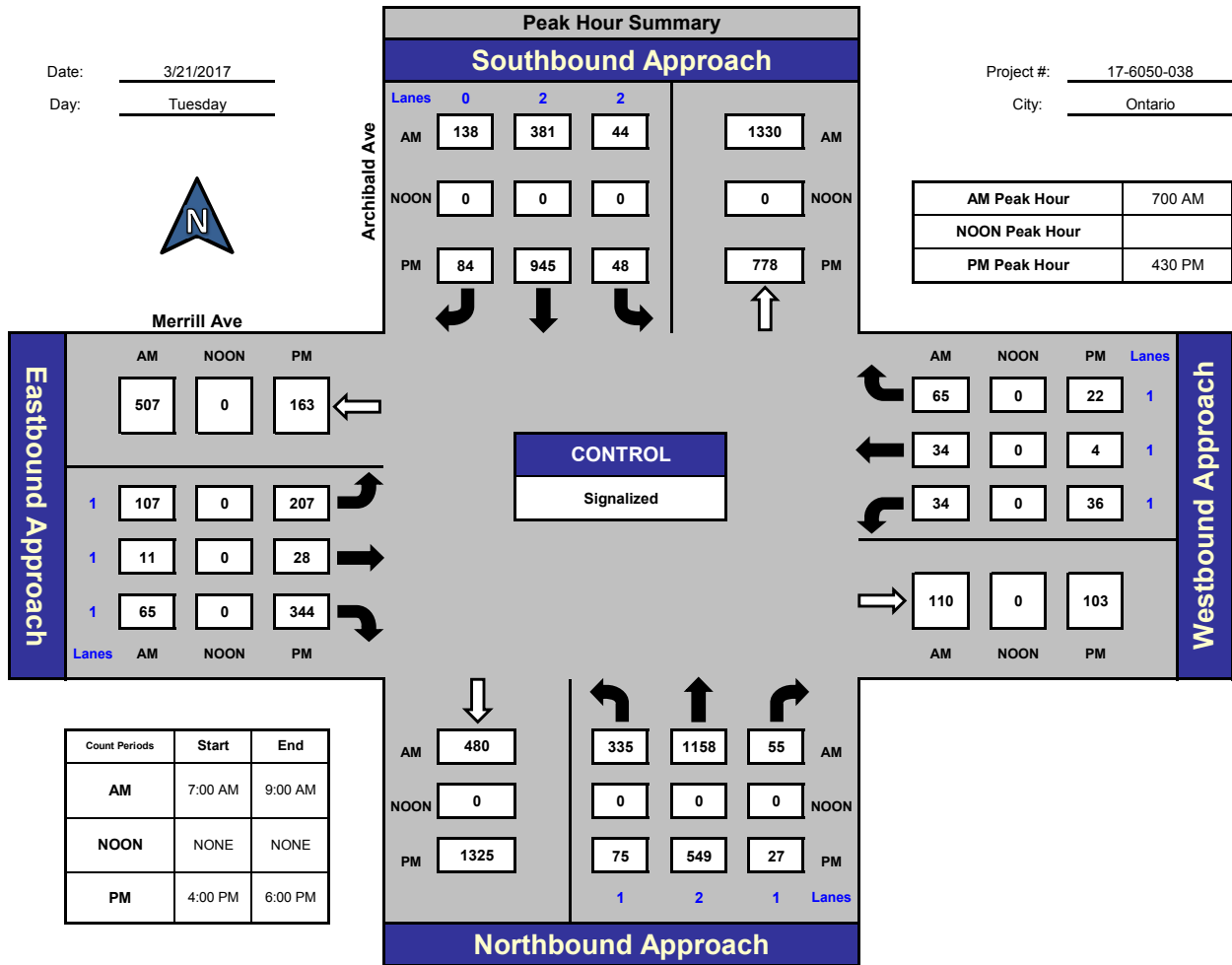


National Data & Surveying Services

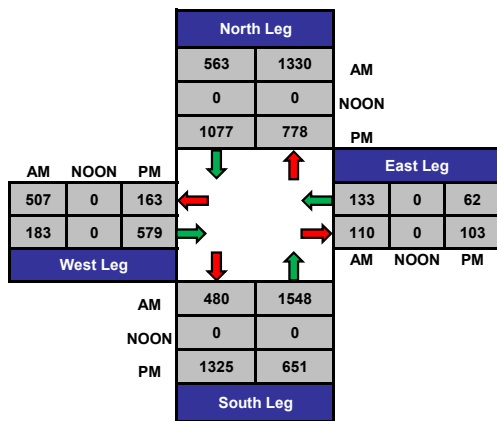
## Archibald Ave and Merrill Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

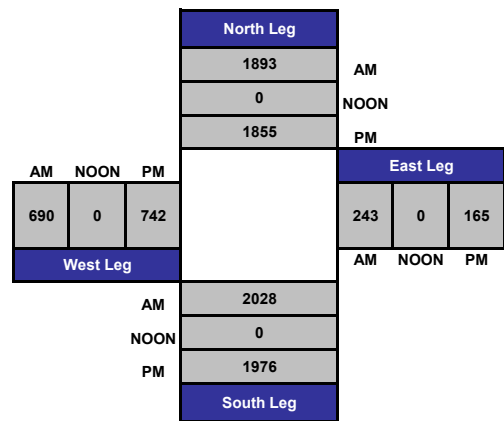
Project #: 17-6050-038  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

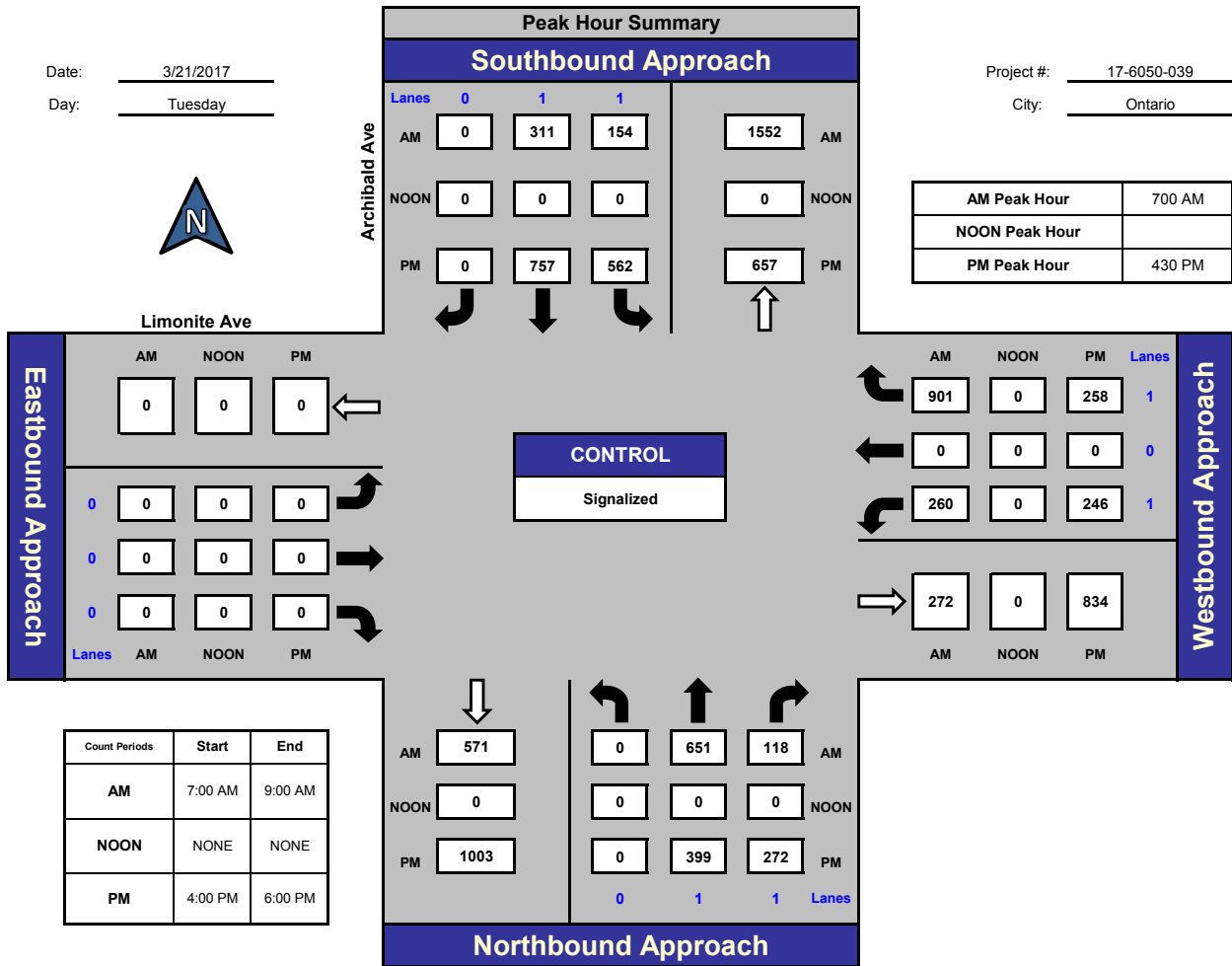


National Data & Surveying Services

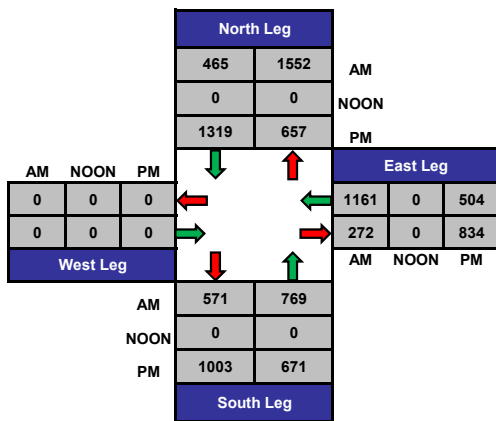
## Archibald Ave and Limonite Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

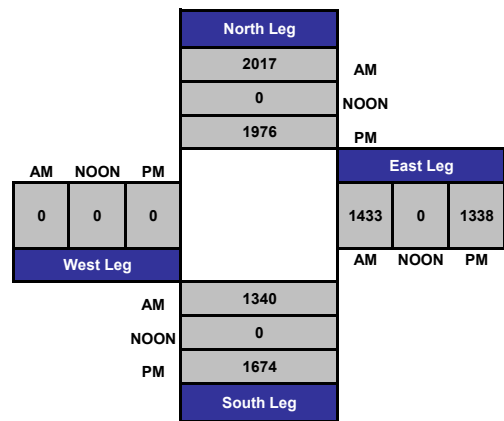
Project #: 17-6050-039  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

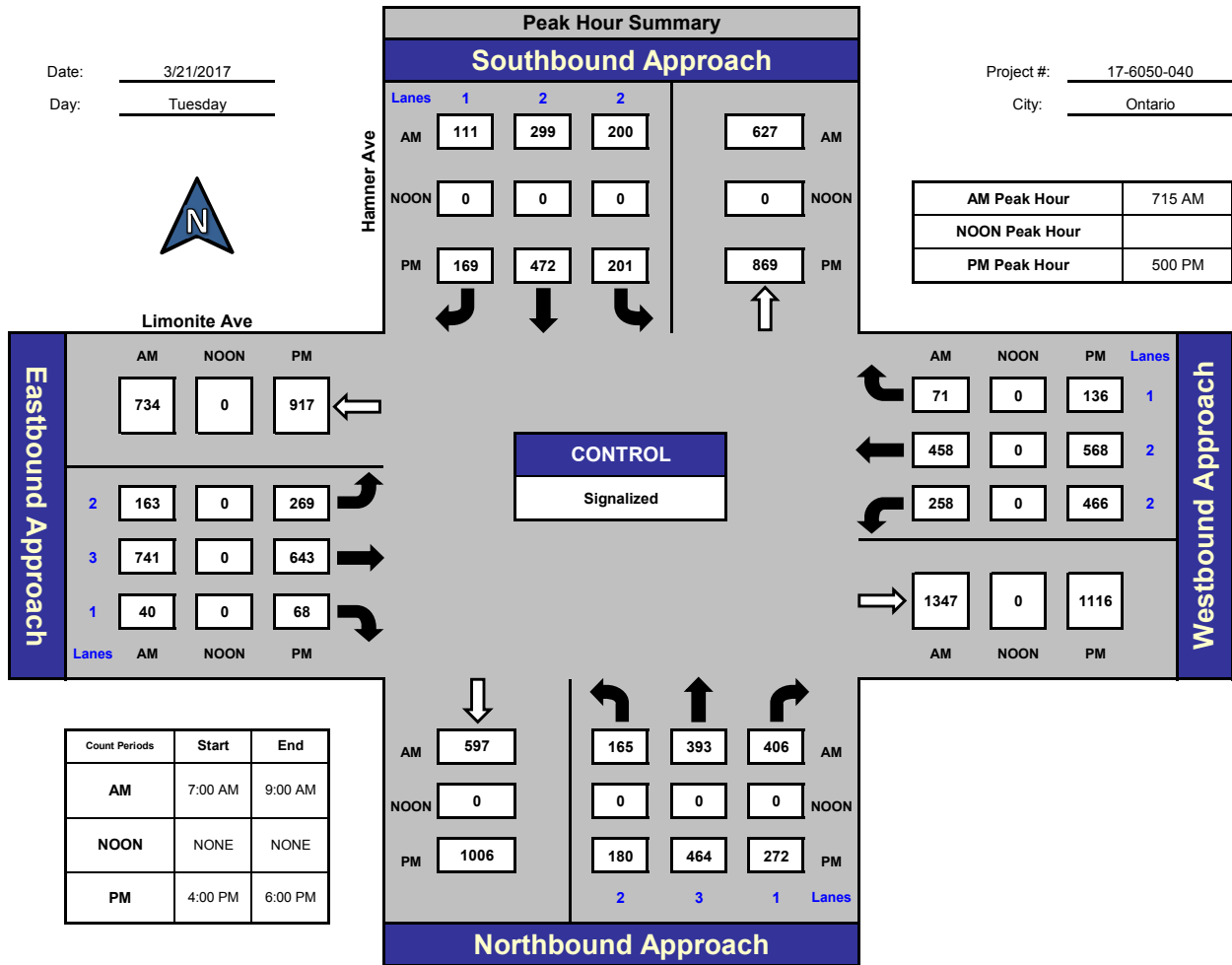


National Data & Surveying Services

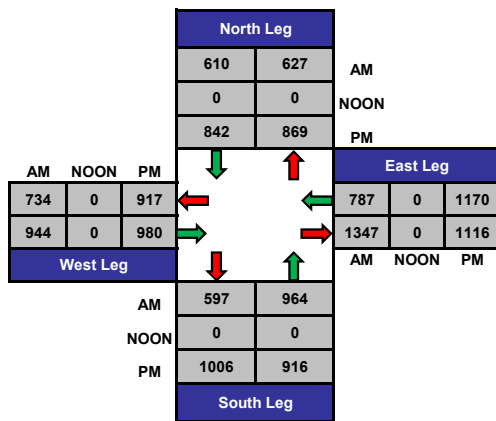
## Hamner Ave and Limonite Ave., Ontario

Date: 3/21/2017  
Day: Tuesday

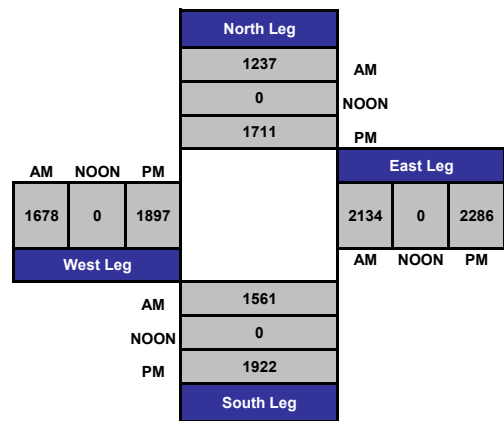
Project #: 17-6050-040  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

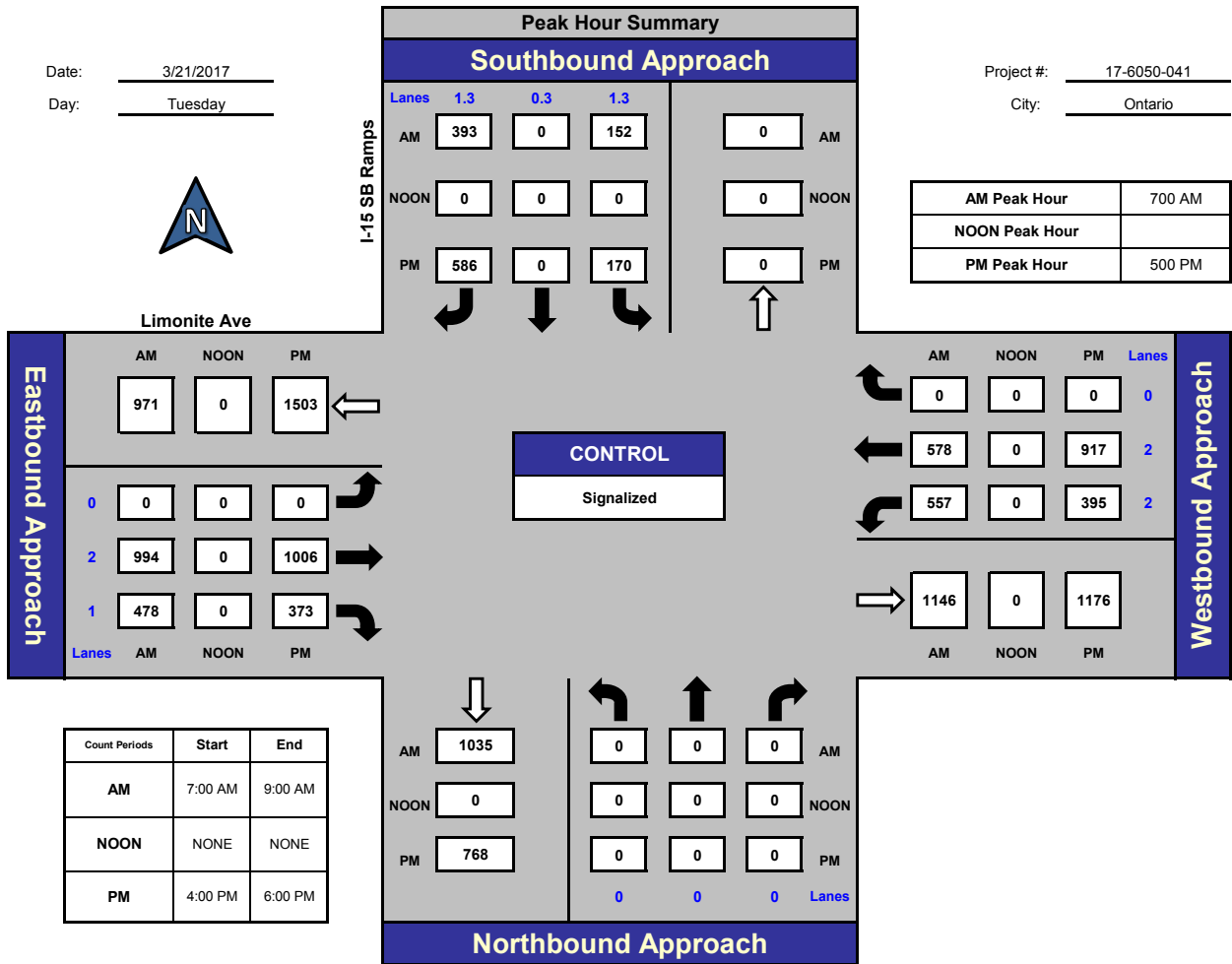
## I-15 SB Ramps and Limonite Ave., Ontario

Date: 3/21/2017

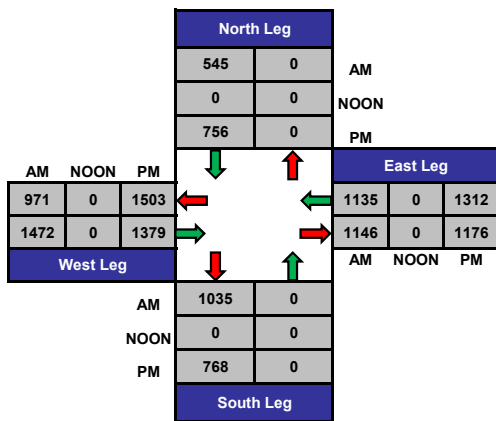
Day: Tuesday

Project #: 17-6050-041

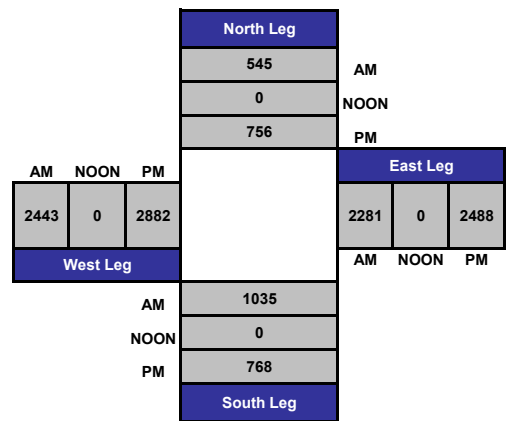
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg





# ITM Peak Hour Summary

Prepared by:

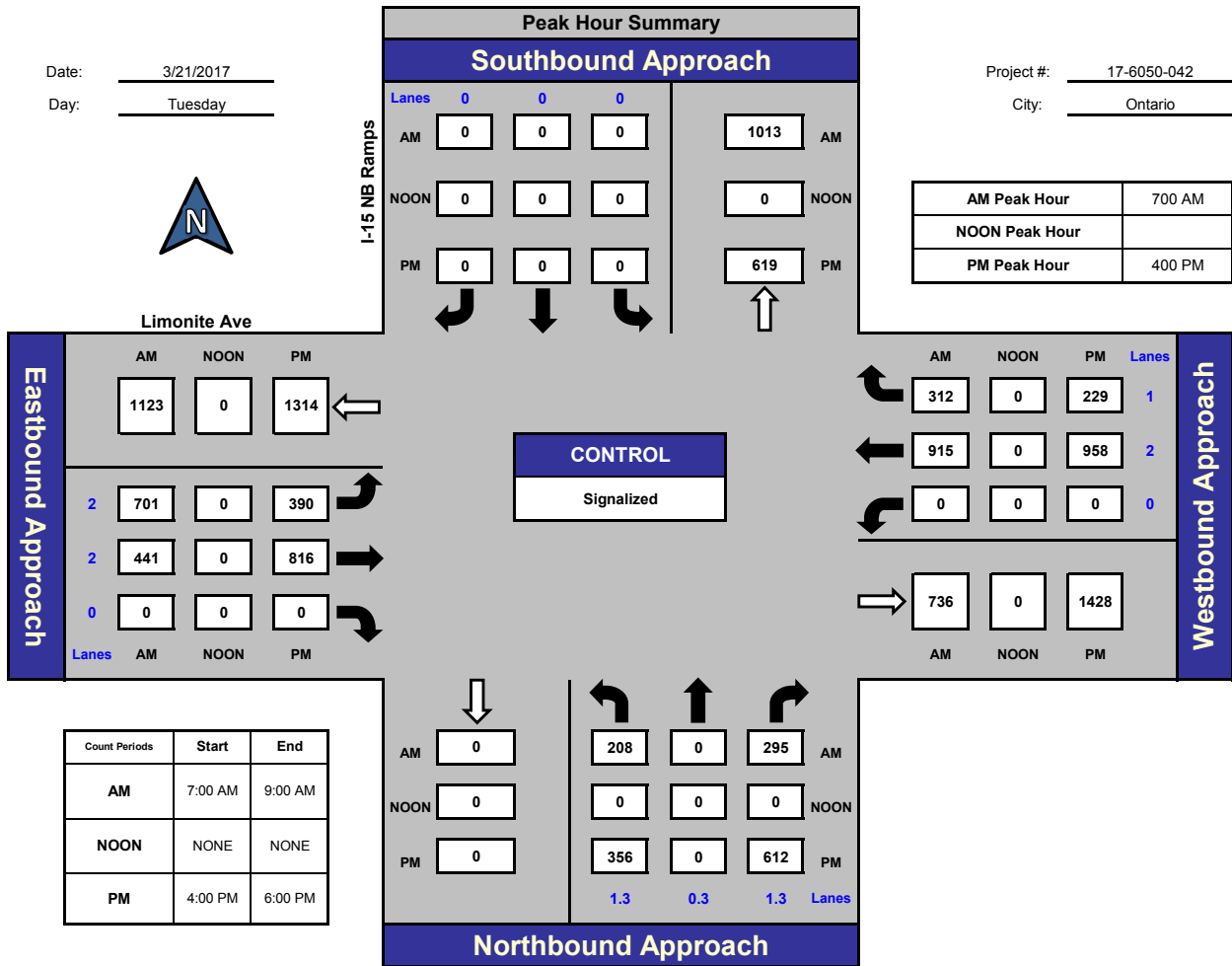


National Data & Surveying Services

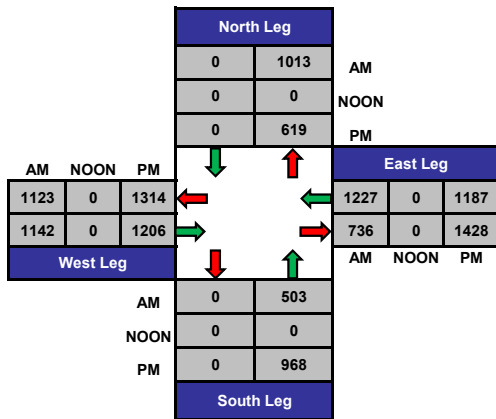
## I-15 NB Ramps and Limonite Ave, Ontario

Date: 3/21/2017  
Day: Tuesday

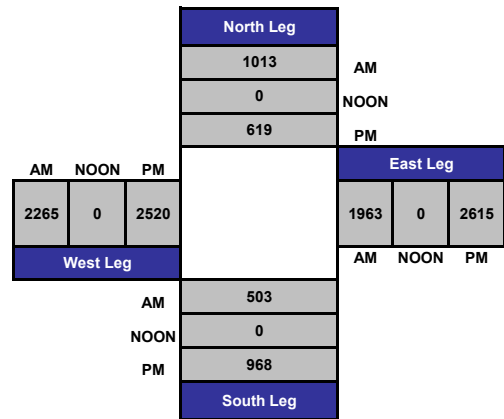
Project #: 17-6050-042  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:

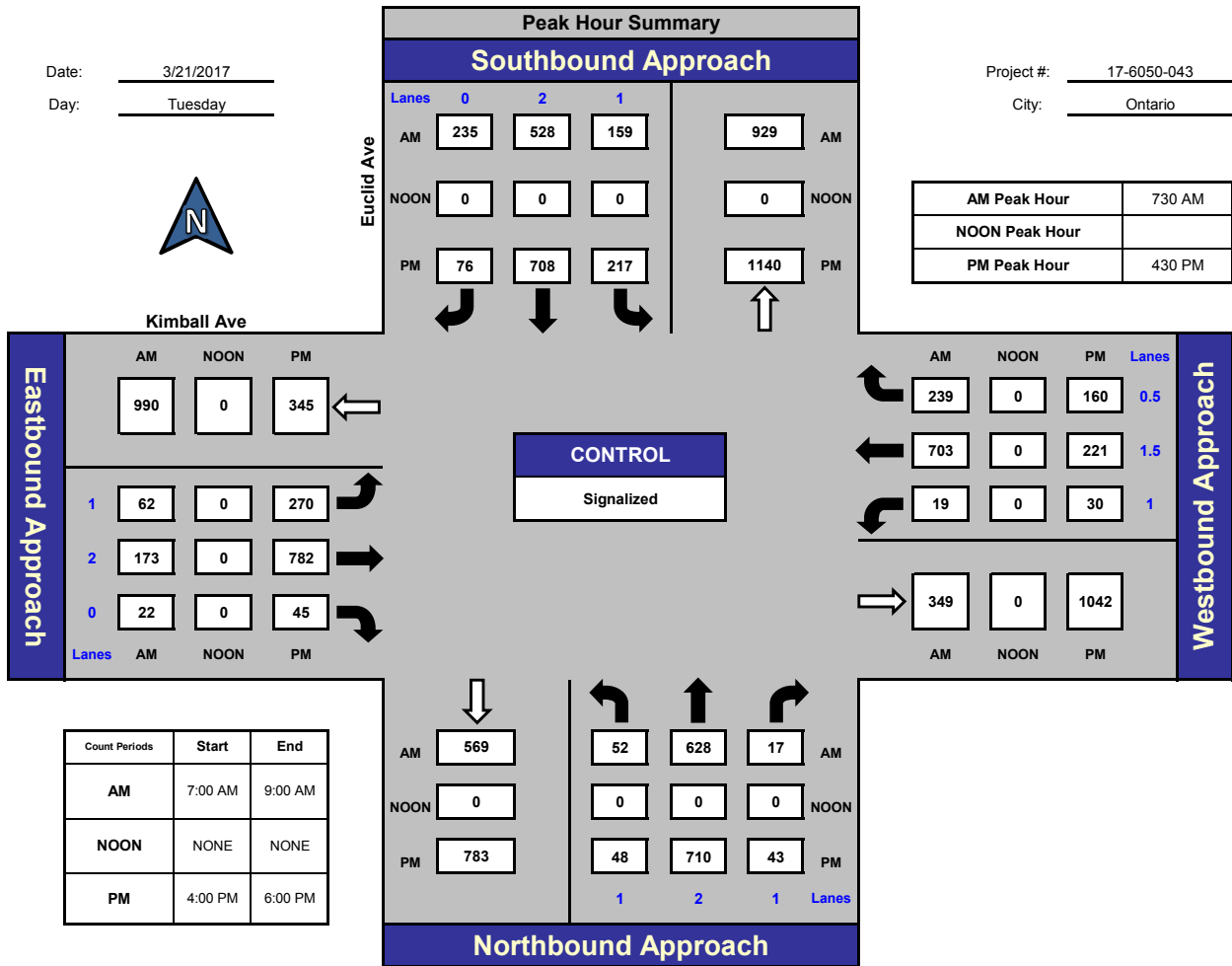


National Data & Surveying Services

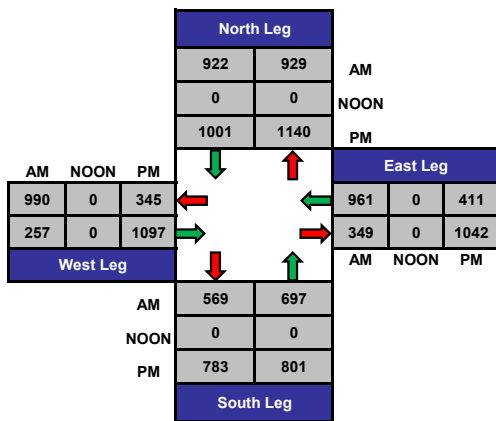
## Euclid Ave and Kimball Ave., Ontario

Date: 3/21/2017  
Day: Tuesday

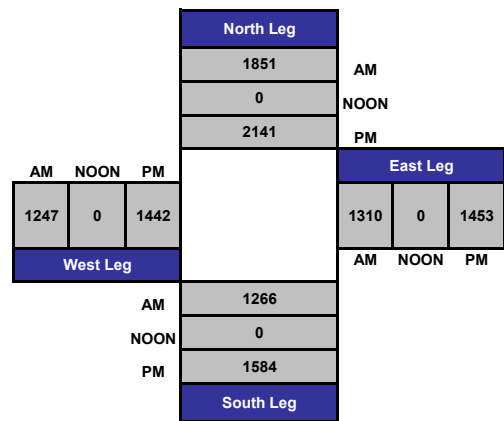
Project #: 17-6050-043  
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

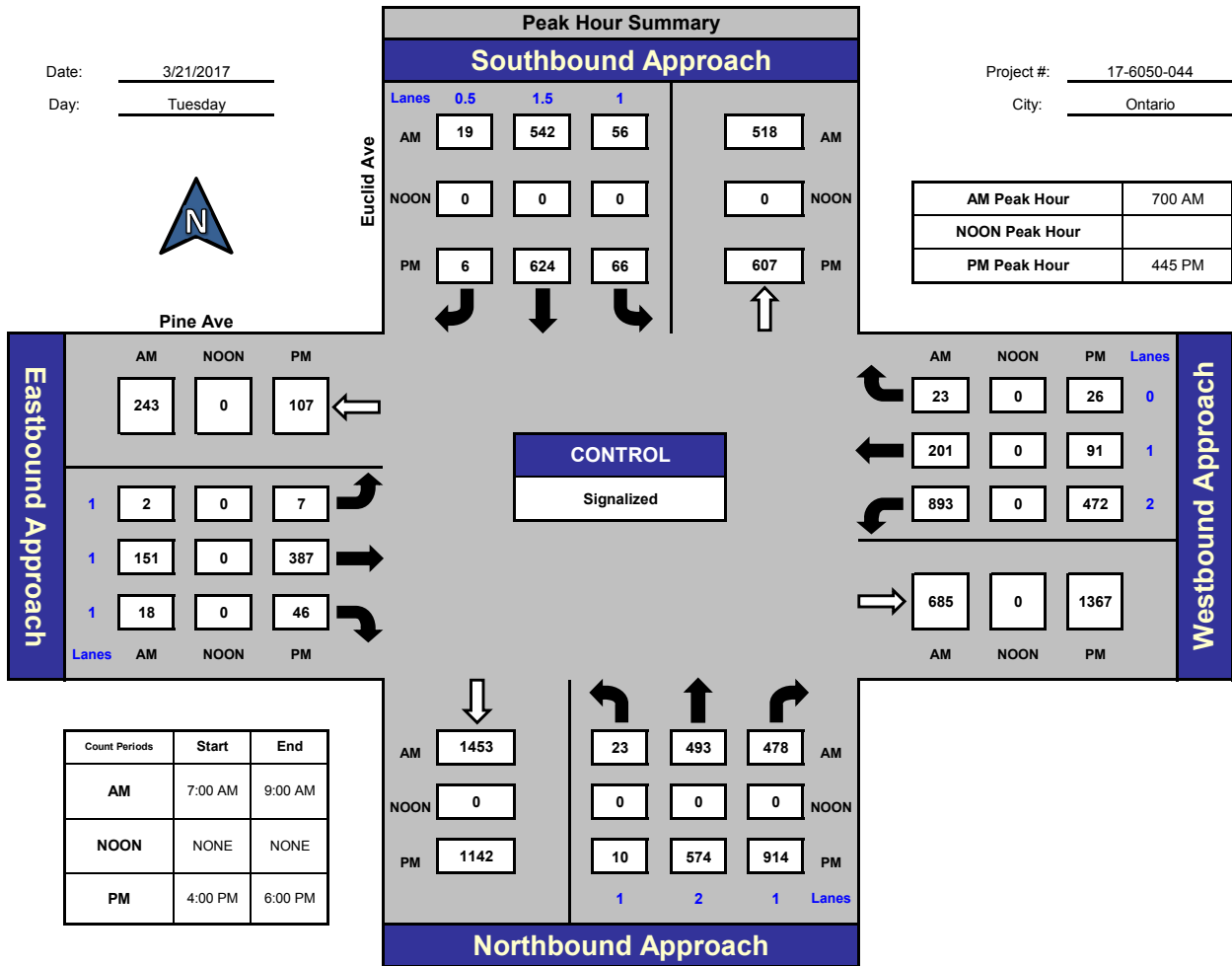
## Euclid Ave and Pine Ave., Ontario

Date: 3/21/2017

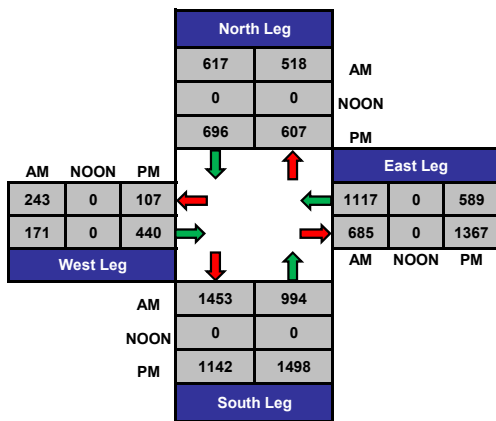
Day: Tuesday

Project #: 17-6050-044

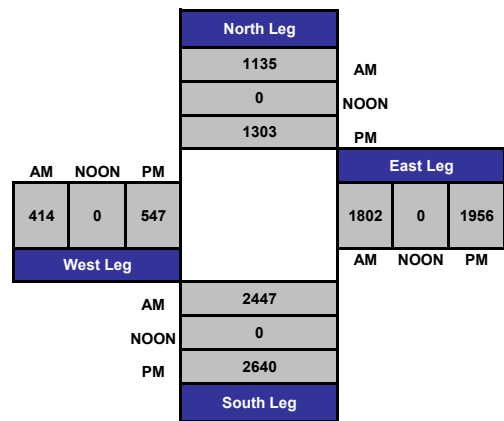
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



# ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

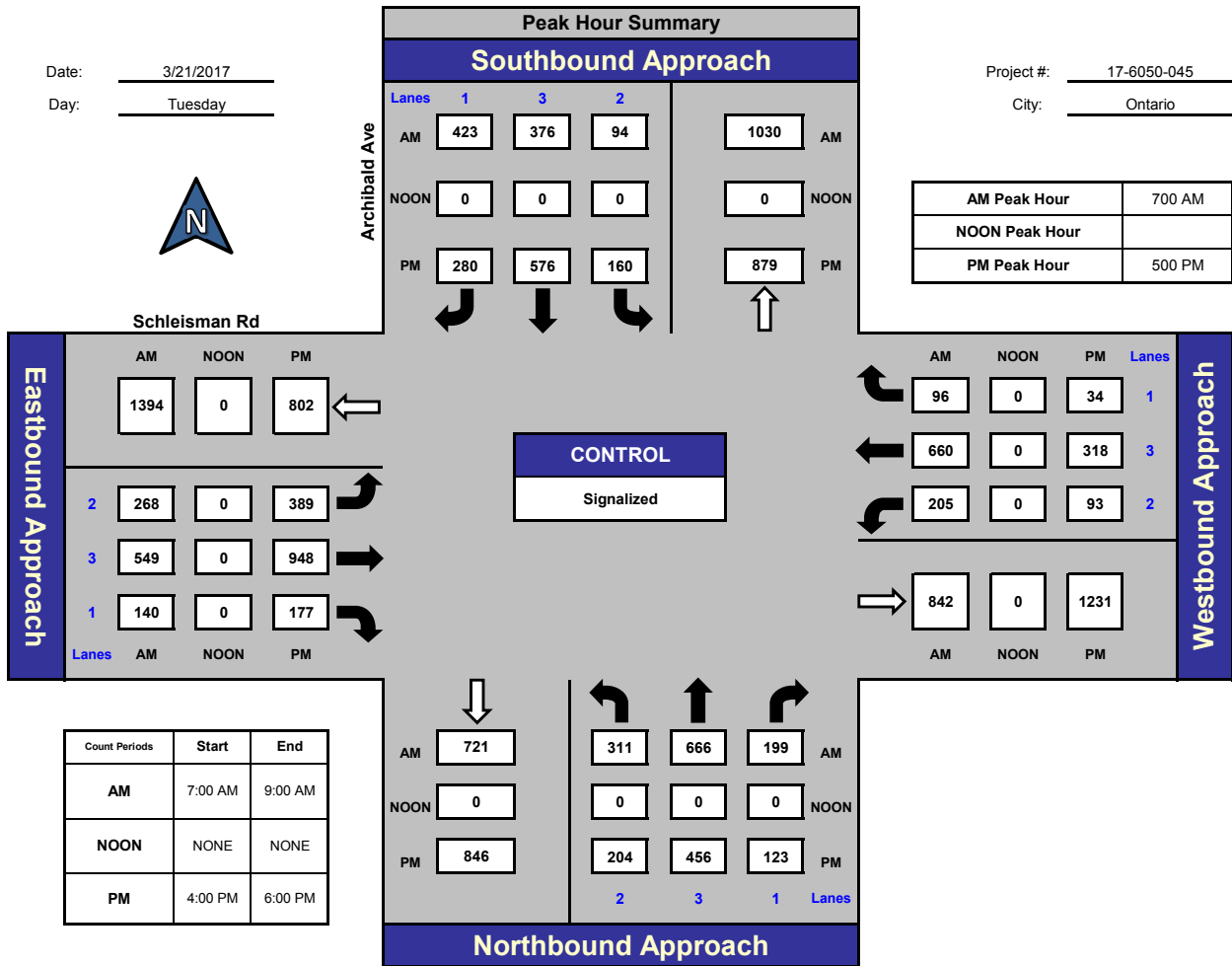
## Archibald Ave and Schleisman Rd, Ontario

Date: 3/21/2017

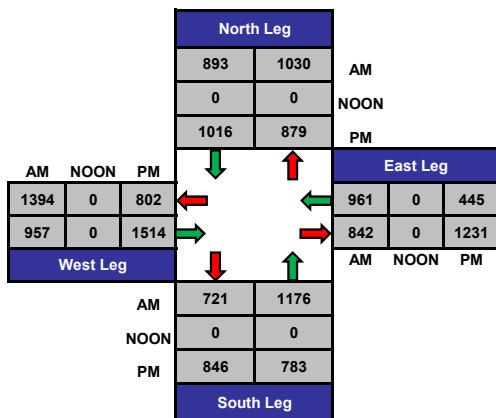
Day: Tuesday

Project #: 17-6050-045

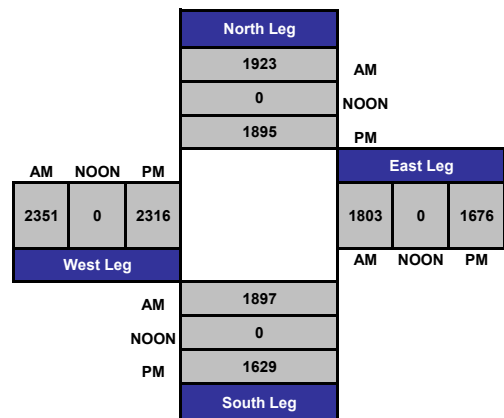
City: Ontario



### Total Ins & Outs



### Total Volume Per Leg



### VOLUME

Walnut St Bet. Campus Ave & Bon View Ave

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_001

DAILY TOTALS					NB	SB	EB		WB	Total	
					0	0	4,486	4,067	8,553		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00			12	9	21	12:00			42	76	118
00:15			7	5	12	12:15			51	67	118
00:30			3	3	6	12:30			53	47	100
00:45			1	23	3	12:45			50	196	256
				20	4	43					452
01:00			10	5	15	13:00			49	61	110
01:15			6	3	9	13:15			62	58	120
01:30			3	4	7	13:30			43	52	95
01:45			4	23	3	13:45			93	247	340
				15	7	38					476
02:00			1	3	4	14:00			59	59	118
02:15			0	5	5	14:15			72	63	135
02:30			6	0	6	14:30			90	67	157
02:45			4	11	4	14:45			82	303	385
				12	8	23					555
03:00			4	1	5	15:00			115	72	187
03:15			2	4	6	15:15			140	87	227
03:30			4	5	9	15:30			112	90	202
03:45			7	17	7	15:45			89	456	545
				17	14	34					772
04:00			6	5	11	16:00			110	74	184
04:15			4	8	12	16:15			89	78	167
04:30			6	14	20	16:30			99	72	171
04:45			2	18	16	16:45			111	409	520
				43	18	61					708
05:00			6	15	21	17:00			111	77	188
05:15			10	19	29	17:15			119	78	197
05:30			6	25	31	17:30			104	62	166
05:45			13	35	19	17:45			116	450	566
				78	32	113					737
06:00			8	30	38	18:00			108	71	179
06:15			11	27	38	18:15			98	65	163
06:30			27	31	58	18:30			92	61	153
06:45			20	66	52	18:45			114	412	526
				140	72	206					674
07:00			40	87	127	19:00			67	69	136
07:15			75	82	157	19:15			92	49	141
07:30			133	84	217	19:30			56	49	105
07:45			68	316	80	19:45			55	270	325
				333	148	649					481
08:00			72	73	145	20:00			42	43	85
08:15			95	82	177	20:15			44	36	80
08:30			72	105	177	20:30			42	32	74
08:45			43	282	54	20:45			57	185	242
				314	97	596					330
09:00			37	51	88	21:00			29	26	55
09:15			35	55	90	21:15			31	15	46
09:30			37	57	94	21:30			27	22	49
09:45			33	142	52	21:45			27	114	141
				215	85	357					198
10:00			43	42	85	22:00			19	23	42
10:15			50	41	91	22:15			19	19	38
10:30			50	50	100	22:30			18	16	34
10:45			46	189	47	22:45			20	76	96
				180	93	369					148
11:00			44	41	85	23:00			16	12	28
11:15			44	42	86	23:15			11	11	22
11:30			48	79	127	23:30			15	12	27
11:45			61	197	84	23:45			7	49	56
				246	145	443					90
<b>TOTALS</b>				1319	1613	<b>2932</b>	<b>TOTALS</b>		3167	2454	<b>5621</b>
<b>SPLIT %</b>				45.0%	55.0%	<b>34.3%</b>	<b>SPLIT %</b>		56.3%	43.7%	<b>65.7%</b>

DAILY TOTALS					NB	SB	EB		WB	Total
					0	0	4,486	4,067	8,553	

AM Peak Hour			07:30	07:45	07:30	PM Peak Hour			15:00	15:15	15:00
AM Pk Volume			368	340	687	PM Pk Volume			456	318	772
Pk Hr Factor			0.692	0.810	0.791	Pk Hr Factor			0.814	0.883	0.850
7 - 9 Volume	0	0	598	647	1245	4 - 6 Volume	0	0	859	586	1445
7 - 9 Peak Hour			07:30	07:45	07:30	4 - 6 Peak Hour			17:00	16:15	16:30
7 - 9 Pk Volume	0	0	368	340	687	4 - 6 Pk Volume	0	0	450	302	742
Pk Hr Factor	0.000	0.000	0.692	0.810	0.791	Pk Hr Factor	0.000	0.000	0.945	0.968	0.942

# VOLUME

Riverside Dr Bet. Bon View Ave & Cucamonga Ave

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_002

DAILY TOTALS					NB	SB	EB	WB	Total			
					0	0	7,668	9,134	16,802			
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL	
00:00			17	4	21	12:00			116	134	250	
00:15			10	16	26	12:15			85	89	174	
00:30			13	15	28	12:30			89	104	193	
00:45			6	46	7	42	12:45		97	387	105	432
01:00			10	4	14	13:00			94	126	220	
01:15			9	2	11	13:15			99	101	200	
01:30			5	10	15	13:30			102	87	189	
01:45			5	29	5	21	13:45		122	417	137	451
02:00			10	11	21	14:00			116	134	250	
02:15			11	9	20	14:15			124	113	237	
02:30			14	7	21	14:30			156	102	258	
02:45			13	48	7	34	14:45		137	533	132	481
03:00			4	8	12	15:00			175	138	313	
03:15			7	7	14	15:15			184	164	348	
03:30			15	18	33	15:30			174	147	321	
03:45			12	38	21	54	15:45		199	732	124	573
04:00			9	32	41	16:00			159	163	322	
04:15			8	30	38	16:15			216	184	400	
04:30			21	52	73	16:30			182	152	334	
04:45			26	64	69	183	16:45		232	789	159	658
05:00			14	120	134	17:00			178	183	361	
05:15			27	164	191	17:15			211	200	411	
05:30			26	191	217	17:30			198	194	392	
05:45			32	99	162	637	17:45		179	766	175	752
06:00			38	100	138	18:00			185	119	304	
06:15			55	115	170	18:15			165	132	297	
06:30			65	140	205	18:30			132	107	239	
06:45			77	235	179	534	18:45		124	606	102	460
07:00			58	221	279	19:00			108	89	197	
07:15			101	220	321	19:15			129	81	210	
07:30			155	256	411	19:30			94	84	178	
07:45			134	448	208	905	19:45		96	427	60	314
08:00			94	206	300	20:00			88	75	163	
08:15			117	202	319	20:15			92	71	163	
08:30			107	180	287	20:30			82	60	142	
08:45			80	398	153	741	20:45		68	330	56	262
09:00			73	125	198	21:00			53	49	102	
09:15			65	106	171	21:15			49	45	94	
09:30			61	92	153	21:30			60	49	109	
09:45			63	262	100	423	21:45		63	225	37	180
10:00			67	93	160	22:00			28	29	57	
10:15			67	84	151	22:15			27	43	70	
10:30			67	91	158	22:30			38	28	66	
10:45			93	294	78	346	22:45		27	120	30	130
11:00			77	108	185	23:00			29	24	53	
11:15			72	95	167	23:15			18	17	35	
11:30			73	117	190	23:30			14	14	28	
11:45			76	298	130	450	23:45		16	77	16	71
<b>TOTALS</b>			2259	4370	6629	<b>TOTALS</b>			5409	4764	10173	
<b>SPLIT %</b>			34.1%	65.9%	39.5%	<b>SPLIT %</b>			53.2%	46.8%	60.5%	

DAILY TOTALS					NB	SB	EB	WB	Total		
					0	0	7,668	9,134	16,802		
AM Peak Hour			07:30	07:00	07:15	PM Peak Hour			16:45	17:00	16:45
AM Pk Volume			500	905	1374	PM Pk Volume			819	752	1555
Pk Hr Factor			0.806	0.884	0.836	Pk Hr Factor			0.883	0.940	0.946
7 - 9 Volume	0	0	846	1646	2492	4 - 6 Volume	0	0	1555	1410	2965
7 - 9 Peak Hour			07:30	07:00	07:15	4 - 6 Peak Hour			16:45	17:00	16:45
7 - 9 Pk Volume	0	0	500	905	1374	4 - 6 Pk Volume	0	0	819	752	1555
Pk Hr Factor	0.000	0.000	0.806	0.884	0.836	Pk Hr Factor	0.000	0.000	0.883	0.940	0.946

**VOLUME**

Chino Ave Bet. Euclid Ave &amp; Grove Ave

Day: Thursday  
Date: 3/16/2017City: Ontario  
Project #: CA17\_6049\_003

DAILY TOTALS					NB	SB	EB	WB	Total					
					0	0	2,209	1,375	3,584					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			4	1	5	12:00			24	16	40			
00:15			2	1	3	12:15			31	20	51			
00:30			1	0	1	12:30			30	21	51			
00:45			0	7	4	12:45		7	22	107	19	76	41	183
01:00			2	0	2	13:00			27	15	42			
01:15			0	0	0	13:15			31	12	43			
01:30			2	1	3	13:30			35	22	57			
01:45			0	4	2	13:45		4	25	118	25	74	50	192
02:00			0	2	2	14:00			32	26	58			
02:15			2	0	2	14:15			36	26	62			
02:30			1	3	4	14:30			40	16	56			
02:45			0	3	2	14:45		3	45	153	22	90	67	243
03:00			1	3	4	15:00			45	28	73			
03:15			0	4	4	15:15			40	15	55			
03:30			3	0	3	15:30			75	21	96			
03:45			4	8	1	15:45		8	76	236	23	87	99	323
04:00			2	5	7	16:00			81	22	103			
04:15			1	6	7	16:15			81	20	101			
04:30			5	6	11	16:30			62	27	89			
04:45			3	11	6	16:45		11	67	291	22	91	89	382
05:00			2	7	9	17:00			63	31	94			
05:15			11	12	23	17:15			74	33	107			
05:30			13	17	30	17:30			56	22	78			
05:45			18	44	20	17:45		17	53	246	25	111	78	357
06:00			14	12	26	18:00			47	19	66			
06:15			11	16	27	18:15			53	23	76			
06:30			32	22	54	18:30			40	22	62			
06:45			16	73	32	18:45		82	25	165	11	75	36	240
07:00			32	33	65	19:00			27	10	37			
07:15			37	28	65	19:15			30	15	45			
07:30			39	23	62	19:30			19	6	25			
07:45			38	146	38	19:45		122	15	91	6	37	21	128
08:00			28	41	69	20:00			15	4	19			
08:15			32	38	70	20:15			9	9	18			
08:30			33	34	67	20:30			8	10	18			
08:45			31	124	20	20:45		133	10	42	3	26	13	68
09:00			25	29	54	21:00			11	3	14			
09:15			25	18	43	21:15			8	4	12			
09:30			22	10	32	21:30			9	3	12			
09:45			15	87	21	21:45		78	6	34	1	11	7	45
10:00			24	21	45	22:00			5	6	11			
10:15			18	19	37	22:15			6	2	8			
10:30			23	12	35	22:30			11	3	14			
10:45			19	84	17	22:45		69	5	27	0	11	5	38
11:00			20	29	49	23:00			3	5	8			
11:15			28	16	44	23:15			4	3	7			
11:30			20	19	39	23:30			1	1	2			
11:45			28	96	25	23:45		89	4	12	1	10	5	22
<b>TOTALS</b>			687	676	1363	<b>TOTALS</b>			1522	699	2221			
<b>SPLIT %</b>			50.4%	49.6%	38.0%	<b>SPLIT %</b>			68.5%	31.5%	62.0%			

DAILY TOTALS					NB	SB	EB	WB	Total		
					0	0	2,209	1,375	3,584		
AM Peak Hour			07:00	07:45	07:45	PM Peak Hour			15:30	16:30	15:30
AM Pk Volume			146	151	282	PM Pk Volume			313	113	399
Pk Hr Factor			0.936	0.921	0.928	Pk Hr Factor			0.966	0.856	0.968
7 - 9 Volume	0	0	270	255	525	4 - 6 Volume	0	0	537	202	739
7 - 9 Peak Hour			07:00	07:45	07:45	4 - 6 Peak Hour			16:00	16:30	16:00
7 - 9 Pk Volume	0	0	146	151	282	4 - 6 Pk Volume	0	0	291	113	382
Pk Hr Factor	0.000	0.000	0.936	0.921	0.928	Pk Hr Factor	0.000	0.000	0.898	0.856	0.927

### VOLUME

Schaefer Ave Bet. Euclid Ave & Grove Ave

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_004

DAILY TOTALS					NB	SB					Total
					0	0	EB	WB			2,405
							1,403	1,002			
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00			0	0	0	12:00			9	10	19
00:15			1	1	2	12:15			9	12	21
00:30			3	0	3	12:30			20	12	32
00:45			0	4	0	12:45			21	59	17
				1	0	5			17	51	38
01:00			1	0	1	13:00			16	17	33
01:15			4	1	5	13:15			21	20	41
01:30			0	3	3	13:30			29	10	39
01:45			4	9	0	13:45			26	92	13
				4	4	13			13	60	39
02:00			3	0	3	14:00			23	15	38
02:15			0	1	1	14:15			21	11	32
02:30			3	0	3	14:30			30	17	47
02:45			1	7	1	14:45			27	101	15
				2	2	9			15	58	42
03:00			2	5	7	15:00			41	19	60
03:15			0	2	2	15:15			21	19	40
03:30			1	0	1	15:30			56	11	67
03:45			2	5	1	15:45			55	173	13
				8	3	13			13	62	68
04:00			0	1	1	16:00			42	11	53
04:15			0	5	5	16:15			41	9	50
04:30			0	3	3	16:30			44	12	56
04:45			3	3	5	16:45			57	184	18
				14	8	17			18	50	75
05:00			1	6	7	17:00			41	12	53
05:15			3	9	12	17:15			69	16	85
05:30			6	16	22	17:30			44	17	61
05:45			8	18	19	17:45			55	209	15
				50	27	68			15	60	70
06:00			6	10	16	18:00			32	10	42
06:15			6	13	19	18:15			37	10	47
06:30			7	21	28	18:30			19	8	27
06:45			11	30	27	18:45			24	112	10
				71	38	101			10	38	34
07:00			12	26	38	19:00			25	8	33
07:15			16	30	46	19:15			11	7	18
07:30			20	26	46	19:30			8	4	12
07:45			14	62	63	19:45			7	51	4
				145	77	207			4	23	11
08:00			23	33	56	20:00			7	2	9
08:15			14	33	47	20:15			8	3	11
08:30			14	21	35	20:30			9	5	14
08:45			15	66	24	20:45			8	32	2
				111	39	177			2	12	10
09:00			15	18	33	21:00			4	2	6
09:15			13	9	22	21:15			5	3	8
09:30			12	10	22	21:30			3	3	6
09:45			10	50	7	21:45			2	14	3
				44	17	94			3	11	5
10:00			10	11	21	22:00			1	2	3
10:15			15	18	33	22:15			3	3	6
10:30			16	11	27	22:30			3	2	5
10:45			12	53	13	22:45			1	8	1
				53	25	106			1	8	2
11:00			14	11	25	23:00			0	1	1
11:15			11	16	27	23:15			0	2	2
11:30			14	17	31	23:30			2	1	3
11:45			18	57	15	23:45			2	4	3
				59	33	116			3	7	5
TOTALS			364	562	926	TOTALS			1039	440	1479
SPLIT %			39.3%	60.7%	38.5%	SPLIT %			70.3%	29.7%	61.5%

DAILY TOTALS					NB	SB					Total
					0	0	EB	WB			2,405
							1,403	1,002			
AM Peak Hour			07:15	07:30	07:30	PM Peak Hour			16:30	14:30	16:45
AM Pk Volume			73	155	226	PM Pk Volume			211	70	274
Pk Hr Factor			0.793	0.615	0.734	Pk Hr Factor			0.764	0.921	0.806
7 - 9 Volume	0	0	128	256	384	4 - 6 Volume	0	0	393	110	503
7 - 9 Peak Hour			07:15	07:30	07:30	4 - 6 Peak Hour			16:30	16:45	16:45
7 - 9 Pk Volume	0	0	73	155	226	4 - 6 Pk Volume	0	0	211	63	274
Pk Hr Factor	0.000	0.000	0.793	0.615	0.734	Pk Hr Factor	0.000	0.000	0.764	0.875	0.806



**VOLUME**

Grove Ave Bet. SR 60 WB Ramps &amp; SR 60 EB Ramps

Day: Tuesday  
Date: 3/21/2017City: Ontario  
Project #: CA17\_6049\_005

DAILY TOTALS					NB	SB	EB	WB	Total		
					17,257	15,521	0	0	32,778		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	40	45			85	12:00	277	325			602
00:15	50	25			75	12:15	275	314			589
00:30	31	37			68	12:30	294	252			546
00:45	24	145	20	127	44	12:45	271	1117	265	1156	2273
01:00	24	37			61	13:00	280	235			515
01:15	19	22			41	13:15	243	253			496
01:30	31	28			59	13:30	275	308			583
01:45	17	91	30	117	47	13:45	273	1071	348	1144	2215
02:00	13	6			19	14:00	248	240			488
02:15	26	13			39	14:15	269	219			488
02:30	29	25			54	14:30	264	229			493
02:45	32	100	36	80	68	14:45	242	1023	284	972	1995
03:00	26	23			49	15:00	263	271			534
03:15	32	38			70	15:15	268	219			487
03:30	54	31			85	15:30	292	265			557
03:45	71	183	53	145	124	15:45	269	1092	293	1048	2140
04:00	47	28			75	16:00	267	287			554
04:15	69	52			121	16:15	256	284			540
04:30	97	73			170	16:30	278	289			567
04:45	130	343	82	235	212	16:45	263	1064	248	1108	2172
05:00	108	97			205	17:00	234	317			551
05:15	107	114			221	17:15	229	285			514
05:30	179	151			330	17:30	245	249			494
05:45	282	676	159	521	441	17:45	214	922	221	1072	1994
06:00	210	128			338	18:00	244	225			469
06:15	215	159			374	18:15	226	208			434
06:30	271	145			416	18:30	224	183			407
06:45	284	980	164	596	448	18:45	225	919	155	771	1690
07:00	239	186			425	19:00	191	155			346
07:15	227	165			392	19:15	194	129			323
07:30	246	207			453	19:30	179	154			333
07:45	349	1061	197	755	546	19:45	159	723	134	572	1295
08:00	294	192			486	20:00	164	126			290
08:15	289	178			467	20:15	172	145			317
08:30	310	205			515	20:30	146	104			250
08:45	297	1190	187	762	484	20:45	170	652	109	484	1136
09:00	286	197			483	21:00	142	115			257
09:15	241	219			460	21:15	120	105			225
09:30	243	246			489	21:30	104	92			196
09:45	240	1010	199	861	439	21:45	98	464	84	396	860
10:00	219	178			397	22:00	85	86			171
10:15	209	260			469	22:15	99	68			167
10:30	209	255			464	22:30	78	61			139
10:45	227	864	277	970	504	22:45	77	339	52	267	606
11:00	245	298			543	23:00	84	56			140
11:15	223	278			501	23:15	55	46			101
11:30	250	288			538	23:30	54	49			103
11:45	261	979	311	1175	572	23:45	56	249	36	187	436
<b>TOTALS</b>	<b>7622</b>	<b>6344</b>			<b>13966</b>	<b>TOTALS</b>	<b>9635</b>	<b>9177</b>			<b>18812</b>
<b>SPLIT %</b>	<b>54.6%</b>	<b>45.4%</b>			<b>42.6%</b>	<b>SPLIT %</b>	<b>51.2%</b>	<b>48.8%</b>			<b>57.4%</b>

DAILY TOTALS					NB	SB	EB	WB	Total
					17,257	15,521	0	0	32,778
AM Peak Hour	07:45	11:30			11:45	PM Peak Hour	12:15	12:00	12:00
AM Pk Volume	1242	1238			2309	PM Pk Volume	1120	1156	2273
Pk Hr Factor	0.890	0.952			0.959	Pk Hr Factor	0.952	0.889	0.944
7 - 9 Volume	2251	1517	0	0	3768	4 - 6 Volume	1986	2180	4166
7 - 9 Peak Hour	07:45	07:30			07:45	4 - 6 Peak Hour	16:00	16:30	16:00
7 - 9 Pk Volume	1242	774	0	0	2014	4 - 6 Pk Volume	1064	1139	2172
Pk Hr Factor	0.890	0.935	0.000	0.000	0.922	Pk Hr Factor	0.957	0.898	0.958

# VOLUME

Grove Ave Bet. Riverside Dr & Chino Ave

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_006

DAILY TOTALS					NB	SB	EB	WB	Total		
					4,347	3,772	0	0	8,119		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	5	8			13	12:00	77	45			122
00:15	9	7			16	12:15	64	40			104
00:30	6	2			8	12:30	53	49			102
00:45	8	28	5	22	13	12:45	53	247	52	186	105
01:00	6	7			13	13:00	59	65			124
01:15	7	7			14	13:15	47	39			86
01:30	4	8			12	13:30	61	57			118
01:45	9	26	5	27	14	13:45	82	249	52	213	134
02:00	1	7			8	14:00	74	51			125
02:15	9	12			21	14:15	71	56			127
02:30	10	15			25	14:30	98	54			152
02:45	12	32	22	56	34	14:45	107	350	51	212	158
03:00	12	14			26	15:00	103	67			170
03:15	5	12			17	15:15	91	73			164
03:30	7	14			21	15:30	94	50			144
03:45	8	32	19	59	27	15:45	151	439	44	234	195
04:00	14	17			31	16:00	103	46			149
04:15	11	19			30	16:15	91	64			155
04:30	14	49			63	16:30	78	58			136
04:45	17	56	40	125	57	16:45	100	372	81	249	181
05:00	14	39			53	17:00	101	59			160
05:15	8	51			59	17:15	126	60			186
05:30	14	67			81	17:30	86	64			150
05:45	22	58	81	238	103	17:45	92	405	47	230	139
06:00	28	65			93	18:00	67	50			117
06:15	25	61			86	18:15	72	46			118
06:30	33	68			101	18:30	72	43			115
06:45	56	142	82	276	138	18:45	65	276	29	168	94
07:00	46	75			121	19:00	64	40			104
07:15	63	63			126	19:15	64	22			86
07:30	75	62			137	19:30	39	38			77
07:45	77	261	75	275	152	19:45	35	202	32	132	67
08:00	61	60			121	20:00	33	31			64
08:15	67	42			109	20:15	27	24			51
08:30	68	59			127	20:30	14	23			37
08:45	68	264	53	214	121	20:45	20	94	14	92	34
09:00	53	53			106	21:00	22	26			48
09:15	41	55			96	21:15	16	18			34
09:30	46	47			93	21:30	20	15			35
09:45	49	189	41	196	90	21:45	25	83	15	74	40
10:00	45	45			90	22:00	14	12			26
10:15	52	43			95	22:15	8	13			21
10:30	41	50			91	22:30	17	13			30
10:45	58	196	56	194	114	22:45	11	50	13	51	24
11:00	63	50			113	23:00	9	14			23
11:15	61	48			109	23:15	5	11			16
11:30	62	55			117	23:30	24	12			36
11:45	58	244	51	204	109	23:45	14	52	8	45	22
<b>TOTALS</b>	<b>1528</b>	<b>1886</b>			<b>3414</b>	<b>TOTALS</b>	<b>2819</b>	<b>1886</b>			<b>4705</b>
<b>SPLIT %</b>	<b>44.8%</b>	<b>55.2%</b>			<b>42.0%</b>	<b>SPLIT %</b>	<b>59.9%</b>	<b>40.1%</b>			<b>58.0%</b>

DAILY TOTALS					NB	SB	EB	WB	Total		
					4,347	3,772	0	0	8,119		
AM Peak Hour	07:30	06:30		07:00	PM Peak Hour	15:00	16:45		16:45		
AM Pk Volume	280	288		536	PM Pk Volume	439	264		677		
Pk Hr Factor	0.909	0.878		0.882	Pk Hr Factor	0.727	0.815		0.910		
7 - 9 Volume	525	489	0	0	1014	4 - 6 Volume	777	479	0	0	1256
7 - 9 Peak Hour	07:30	07:00		07:00	4 - 6 Peak Hour	16:45	16:45				16:45
7 - 9 Pk Volume	280	275	0	0	536	4 - 6 Pk Volume	413	264	0	0	677
Pk Hr Factor	0.909	0.917	0.000	0.000	0.882	Pk Hr Factor	0.819	0.815	0.000	0.000	0.910

**VOLUME**

Grand Ave Bet. Pipeline Ave &amp; Ramona Ave

Day: Thursday  
Date: 3/16/2017City: Ontario  
Project #: CA17\_6049\_007

DAILY TOTALS					NB	SB					EB	WB	Total		
					0	0					16,175	15,024	31,199		
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL			
00:00			27	12	39		12:00			245	326	571			
00:15			19	11	30		12:15			268	249	517			
00:30			18	13	31		12:30			247	250	497			
00:45			22	86	11	47	12:45			282	1042	264	1089	546	2131
01:00			27	14	41		13:00			277	238	515			
01:15			20	10	30		13:15			248	193	441			
01:30			13	14	27		13:30			256	213	469			
01:45			20	80	17	55	13:45			248	1029	256	900	504	1929
02:00			14	16	30		14:00			272	241	513			
02:15			16	13	29		14:15			222	192	414			
02:30			22	13	35		14:30			283	267	550			
02:45			11	63	19	61	14:45			288	1065	223	923	511	1988
03:00			13	27	40		15:00			258	220	478			
03:15			12	24	36		15:15			301	240	541			
03:30			27	29	56		15:30			291	278	569			
03:45			25	77	43	123	15:45			266	1116	263	1001	529	2117
04:00			15	63	78		16:00			280	232	512			
04:15			26	83	109		16:15			321	184	505			
04:30			53	98	151		16:30			283	254	537			
04:45			59	153	112	356	16:45			283	1167	248	918	531	2085
05:00			65	135	200		17:00			309	291	600			
05:15			86	131	217		17:15			272	230	502			
05:30			106	157	263		17:30			275	248	523			
05:45			135	392	216	639	17:45			328	1184	260	1029	588	2213
06:00			93	180	273		18:00			270	204	474			
06:15			107	214	321		18:15			292	192	484			
06:30			112	193	305		18:30			262	179	441			
06:45			170	482	202	789	18:45			262	1086	169	744	431	1830
07:00			171	249	420		19:00			259	195	454			
07:15			208	254	462		19:15			260	165	425			
07:30			212	229	441		19:30			236	137	373			
07:45			252	843	202	934	19:45			196	951	160	657	356	1608
08:00			207	215	422		20:00			228	139	367			
08:15			228	198	426		20:15			258	125	383			
08:30			191	220	411		20:30			208	129	337			
08:45			214	840	242	875	20:45			221	915	103	496	324	1411
09:00			155	237	392		21:00			212	90	302			
09:15			157	197	354		21:15			148	83	231			
09:30			178	197	375		21:30			136	65	201			
09:45			175	665	225	856	21:45			108	604	58	296	166	900
10:00			188	216	404		22:00			118	48	166			
10:15			173	207	380		22:15			110	36	146			
10:30			200	220	420		22:30			108	57	165			
10:45			203	764	233	876	22:45			106	442	37	178	143	620
11:00			190	258	448		23:00			77	55	132			
11:15			213	271	484		23:15			52	36	88			
11:30			239	258	497		23:30			65	23	88			
11:45			230	872	260	1047	23:45			63	257	21	135	84	392
<b>TOTALS</b>				5317	6658	11975	<b>TOTALS</b>				10858	8366	<b>19224</b>		
<b>SPLIT %</b>				44.4%	55.6%	38.4%	<b>SPLIT %</b>				56.5%	43.5%	<b>61.6%</b>		

DAILY TOTALS					NB	SB					EB	WB	Total
					0	0					16,175	15,024	31,199
AM Peak Hour			11:45	11:15	11:30		PM Peak Hour			16:15	12:00	17:00	
AM Pk Volume			990	1115	2075		PM Pk Volume			1196	1089	2213	
Pk Hr Factor			0.924	0.855	0.908		Pk Hr Factor			0.931	0.835	0.922	
7 - 9 Volume	0	0	1683	1809	3492		4 - 6 Volume	0	0	2351	1947	4298	
7 - 9 Peak Hour			07:30	07:00	07:15		4 - 6 Peak Hour			16:15	17:00	17:00	
7 - 9 Pk Volume	0	0	899	934	1779		4 - 6 Pk Volume	0	0	1196	1029	2213	
Pk Hr Factor	0.000	0.000	0.892	0.919	0.963		Pk Hr Factor	0.000	0.000	0.931	0.884	0.922	

### VOLUME

Edison Ave Bet. Mountain Ave & Euclid Ave

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_008

DAILY TOTALS					NB	SB	EB	WB	Total					
					0	0	9,386	8,281	17,667					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			17	11	28	12:00			126	113	239			
00:15			14	3	17	12:15			114	108	222			
00:30			13	14	27	12:30			140	105	245			
00:45			8	52	9	37	12:45		126	506	418	218	924	
01:00			19	8	27	13:00			130	85	215			
01:15			13	8	21	13:15			130	86	216			
01:30			14	8	22	13:30			168	112	280			
01:45			10	56	6	30	13:45		138	566	112	395	250	961
02:00			10	14	24	14:00			143	104	247			
02:15			13	8	21	14:15			162	102	264			
02:30			9	16	25	14:30			193	105	298			
02:45			11	43	16	54	14:45		231	729	99	410	330	1139
03:00			8	18	26	15:00			202	113	315			
03:15			9	21	30	15:15			170	110	280			
03:30			11	24	35	15:30			232	105	337			
03:45			13	41	32	95	15:45		222	826	104	432	326	1258
04:00			12	21	33	16:00			250	86	336			
04:15			20	35	55	16:15			228	105	333			
04:30			33	32	65	16:30			280	106	386			
04:45			22	87	116	204	16:45		215	973	123	420	338	1393
05:00			35	118	153	17:00			239	101	340			
05:15			20	157	177	17:15			247	124	371			
05:30			41	218	259	17:30			230	134	364			
05:45			46	142	191	684	17:45		202	918	113	472	315	1390
06:00			41	150	191	18:00			192	105	297			
06:15			67	146	213	18:15			184	105	289			
06:30			90	173	263	18:30			176	86	262			
06:45			64	262	154	623	18:45		145	697	91	387	236	1084
07:00			70	187	257	19:00			143	95	238			
07:15			94	155	249	19:15			136	63	199			
07:30			126	192	318	19:30			117	60	177			
07:45			115	405	174	708	19:45		94	490	63	281	157	771
08:00			101	172	273	20:00			99	65	164			
08:15			116	196	312	20:15			113	42	155			
08:30			104	189	293	20:30			83	36	119			
08:45			91	412	204	761	20:45		61	356	33	176	94	532
09:00			84	138	222	21:00			77	32	109			
09:15			107	154	261	21:15			75	37	112			
09:30			105	142	247	21:30			64	32	96			
09:45			101	397	113	547	21:45		56	272	25	126	81	398
10:00			94	111	205	22:00			72	26	98			
10:15			81	116	197	22:15			55	29	84			
10:30			89	122	211	22:30			58	19	77			
10:45			104	368	102	451	22:45		44	229	10	84	54	313
11:00			99	86	185	23:00			29	16	45			
11:15			102	111	213	23:15			39	13	52			
11:30			116	101	217	23:30			26	17	43			
11:45			124	441	128	426	23:45		24	118	14	60	38	178
<b>TOTALS</b>			2706	4620	<b>7326</b>	<b>TOTALS</b>			6680	3661	<b>10341</b>			
<b>SPLIT %</b>			36.9%	63.1%	<b>41.5%</b>	<b>SPLIT %</b>			64.6%	35.4%	<b>58.5%</b>			

DAILY TOTALS					NB	SB	EB	WB	Total
					0	0	9,386	8,281	17,667

AM Peak Hour			11:45	08:00	07:30	PM Peak Hour			16:30	16:45	16:30
AM Pk Volume			504	761	1192	PM Pk Volume			981	482	1435
Pk Hr Factor			0.900	0.933	0.937	Pk Hr Factor			0.876	0.899	0.929
7 - 9 Volume	0	0	817	1469	2286	4 - 6 Volume	0	0	1891	892	2783
7 - 9 Peak Hour			07:30	08:00	07:30	4 - 6 Peak Hour			16:30	16:45	16:30
7 - 9 Pk Volume	0	0	458	761	1192	4 - 6 Pk Volume	0	0	981	482	1435
Pk Hr Factor	0.000	0.000	0.909	0.933	0.937	Pk Hr Factor	0.000	0.000	0.876	0.899	0.929

# VOLUME

Eucalyptus Ave Bet. Grove Ave & Carpenter Ave

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_009

DAILY TOTALS					NB	SB	EB	WB	Total		
					0	0	169	189	358		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00			0	0	0	12:00			2	9	11
00:15			0	0	0	12:15			1	6	7
00:30			0	0	0	12:30			2	0	2
00:45			0	2	2	12:45			3	8	16
01:00			0	0	0	13:00			3	2	5
01:15			1	0	1	13:15			4	3	7
01:30			0	1	1	13:30			1	3	4
01:45			1	2	3	13:45			0	8	9
02:00			0	1	1	14:00			3	0	3
02:15			0	1	1	14:15			6	0	6
02:30			0	0	0	14:30			4	6	10
02:45			0	2	2	14:45			4	17	21
03:00			0	0	0	15:00			0	1	1
03:15			0	1	1	15:15			4	4	8
03:30			1	0	1	15:30			1	2	3
03:45			0	1	1	15:45			3	8	11
04:00			0	1	1	16:00			3	2	5
04:15			3	1	4	16:15			4	2	6
04:30			1	4	5	16:30			3	2	5
04:45			1	5	6	16:45			5	15	20
05:00			0	1	1	17:00			2	1	3
05:15			1	1	2	17:15			1	1	2
05:30			1	4	5	17:30			1	1	2
05:45			1	3	4	17:45			2	6	8
06:00			1	0	1	18:00			1	3	4
06:15			2	1	3	18:15			2	4	6
06:30			2	0	2	18:30			1	0	1
06:45			3	8	11	18:45			0	4	4
07:00			3	4	7	19:00			0	3	3
07:15			2	3	5	19:15			2	0	2
07:30			2	7	9	19:30			1	2	3
07:45			4	11	15	19:45			3	6	9
08:00			5	5	10	20:00			0	0	0
08:15			5	4	9	20:15			1	1	2
08:30			5	8	13	20:30			2	0	2
08:45			4	19	23	20:45			0	3	3
09:00			3	3	6	21:00			1	1	2
09:15			2	0	2	21:15			0	0	0
09:30			2	3	5	21:30			1	0	1
09:45			2	9	11	21:45			0	2	2
10:00			5	6	11	22:00			0	0	0
10:15			4	5	9	22:15			0	0	0
10:30			6	4	10	22:30			2	0	2
10:45			3	18	21	22:45			0	2	2
11:00			4	4	8	23:00			0	0	0
11:15			4	3	7	23:15			0	0	0
11:30			4	5	9	23:30			0	0	0
11:45			1	13	14	23:45			1	1	2
<b>TOTALS</b>			<b>89</b>	<b>113</b>	<b>202</b>	<b>TOTALS</b>			<b>80</b>	<b>76</b>	<b>156</b>
<b>SPLIT %</b>			<b>44.1%</b>	<b>55.9%</b>	<b>56.4%</b>	<b>SPLIT %</b>			<b>51.3%</b>	<b>48.7%</b>	<b>43.6%</b>

DAILY TOTALS					NB	SB	EB	WB	Total		
					0	0	169	189	358		
AM Peak Hour			07:45	11:30	07:45	PM Peak Hour			14:00	14:30	14:00
AM Pk Volume			19	26	39	PM Pk Volume			17	17	29
Pk Hr Factor			0.950	0.722	0.750	Pk Hr Factor			0.708	0.708	0.725
7 - 9 Volume	0	0	30	36	66	4 - 6 Volume	0	0	21	14	35
7 - 9 Peak Hour			07:45	07:45	07:45	4 - 6 Peak Hour			16:00	16:00	16:00
7 - 9 Pk Volume	0	0	19	20	39	4 - 6 Pk Volume	0	0	15	9	24
Pk Hr Factor	0.000	0.000	0.950	0.625	0.750	Pk Hr Factor	0.000	0.000	0.750	0.750	0.750

# VOLUME

Merrill Ave Bet. Grove Ave & Carpenter Ave

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_010

DAILY TOTALS					NB	SB	EB	WB	Total					
					0	0	4,304	4,328	8,632					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			9	5	14	12:00			33	35	68			
00:15			3	4	7	12:15			45	46	91			
00:30			9	1	10	12:30			35	42	77			
00:45			4	25	2	12	12:45		46	159	28	151	74	310
01:00			3	7	10	13:00			44	38	82			
01:15			6	4	10	13:15			44	44	88			
01:30			3	3	6	13:30			57	55	112			
01:45			2	14	6	20	13:45		73	218	41	178	114	396
02:00			7	1	8	14:00			84	44	128			
02:15			13	5	18	14:15			79	44	123			
02:30			8	5	13	14:30			100	58	158			
02:45			11	39	10	21	14:45		125	388	52	198	177	586
03:00			11	11	22	15:00			114	52	166			
03:15			6	14	20	15:15			125	52	177			
03:30			8	13	21	15:30			133	48	181			
03:45			11	36	11	49	15:45		120	492	47	199	167	691
04:00			5	17	22	16:00			100	45	145			
04:15			10	21	31	16:15			124	42	166			
04:30			16	59	75	16:30			126	47	173			
04:45			26	57	79	176	16:45		149	499	50	184	199	683
05:00			14	82	96	17:00			126	37	163			
05:15			10	104	114	17:15			133	58	191			
05:30			24	134	158	17:30			113	53	166			
05:45			46	94	117	437	17:45		97	469	46	194	143	663
06:00			42	105	147	18:00			88	38	126			
06:15			38	117	155	18:15			87	35	122			
06:30			49	127	176	18:30			87	50	137			
06:45			41	170	156	505	18:45		57	319	24	147	81	466
07:00			42	110	152	19:00			50	43	93			
07:15			45	134	179	19:15			46	20	66			
07:30			56	121	177	19:30			39	22	61			
07:45			33	176	139	504	19:45		34	169	24	109	58	278
08:00			56	141	197	20:00			31	13	44			
08:15			54	102	156	20:15			36	14	50			
08:30			50	91	141	20:30			26	24	50			
08:45			43	203	73	407	20:45		23	116	9	60	32	176
09:00			32	88	120	21:00			25	15	40			
09:15			30	58	88	21:15			27	20	47			
09:30			34	50	84	21:30			19	16	35			
09:45			36	132	51	247	21:45		23	94	17	68	40	162
10:00			44	42	86	22:00			24	13	37			
10:15			31	41	72	22:15			14	9	23			
10:30			54	44	98	22:30			12	13	25			
10:45			50	179	52	179	22:45		9	59	11	46	20	105
11:00			43	41	84	23:00			4	9	13			
11:15			38	48	86	23:15			9	14	23			
11:30			43	55	98	23:30			14	11	25			
11:45			37	161	54	198	23:45		9	36	5	39	14	75
<b>TOTALS</b>				1286	2755	<b>4041</b>	<b>TOTALS</b>			3018	1573	<b>4591</b>		
<b>SPLIT %</b>				31.8%	68.2%	<b>46.8%</b>	<b>SPLIT %</b>			65.7%	34.3%	<b>53.2%</b>		

DAILY TOTALS					NB	SB	EB	WB	Total
					0	0	4,304	4,328	8,632

AM Peak Hour			08:00	07:15	07:15	PM Peak Hour			16:30	14:30	16:30
AM Pk Volume			203	535	725	PM Pk Volume			534	214	726
Pk Hr Factor			0.906	0.949	0.920	Pk Hr Factor			0.896	0.922	0.912
7 - 9 Volume	0	0	379	911	1290	4 - 6 Volume	0	0	968	378	1346
7 - 9 Peak Hour			08:00	07:15	07:15	4 - 6 Peak Hour			16:30	16:45	16:30
7 - 9 Pk Volume	0	0	203	535	725	4 - 6 Pk Volume	0	0	534	198	726
Pk Hr Factor	0.000	0.000	0.906	0.949	0.920	Pk Hr Factor	0.000	0.000	0.896	0.853	0.912

**VOLUME**

Archibald Ave Bet. SR 60 WB Ramps &amp; SR 60 EB Ramps

Day: Thursday  
Date: 3/16/2017City: Ontario  
Project #: CA17\_6049\_011

DAILY TOTALS					NB	SB	EB	WB	Total		
					17,419	12,229	0	0	29,648		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	51	37			88	12:00	257	261			518
00:15	45	32			77	12:15	284	181			465
00:30	59	36			95	12:30	291	191			482
00:45	42	197	25	130	67	12:45	289	1121	188	821	477
					327						1942
01:00	27	32			59	13:00	258	158			416
01:15	38	17			55	13:15	270	166			436
01:30	37	37			74	13:30	238	160			398
01:45	48	150	19	105	67	13:45	236	1002	150	634	386
					255						1636
02:00	46	27			73	14:00	206	155			361
02:15	47	31			78	14:15	214	150			364
02:30	57	33			90	14:30	185	209			394
02:45	71	221	40	131	111	14:45	209	814	177	691	386
					352						1505
03:00	63	27			90	15:00	234	203			437
03:15	67	40			107	15:15	222	202			424
03:30	76	49			125	15:30	181	223			404
03:45	88	294	60	176	148	15:45	214	851	196	824	410
					470						1675
04:00	102	57			159	16:00	205	257			462
04:15	138	84			222	16:15	199	216			415
04:30	165	91			256	16:30	210	301			511
04:45	211	616	84	316	295	16:45	199	813	338	1112	537
					932						1925
05:00	115	68			183	17:00	169	336			505
05:15	150	101			251	17:15	207	299			506
05:30	217	120			337	17:30	203	335			538
05:45	281	763	124	413	405	17:45	195	774	265	1235	460
					1176						2009
06:00	190	104			294	18:00	214	201			415
06:15	254	121			375	18:15	196	162			358
06:30	270	156			426	18:30	192	160			352
06:45	349	1063	138	519	487	18:45	191	793	148	671	339
					1582						1464
07:00	312	111			423	19:00	180	133			313
07:15	312	114			426	19:15	126	144			270
07:30	341	134			475	19:30	138	101			239
07:45	424	1389	118	477	542	19:45	131	575	104	482	235
					1866						1057
08:00	350	125			475	20:00	133	125			258
08:15	339	131			470	20:15	164	113			277
08:30	343	123			466	20:30	127	115			242
08:45	305	1337	144	523	449	20:45	129	553	101	454	230
					1860						1007
09:00	291	117			408	21:00	125	98			223
09:15	269	122			391	21:15	131	79			210
09:30	254	105			359	21:30	123	92			215
09:45	254	1068	130	474	384	21:45	93	472	67	336	160
					1542						808
10:00	257	134			391	22:00	104	72			176
10:15	241	118			359	22:15	96	70			166
10:30	255	127			382	22:30	86	58			144
10:45	233	986	133	512	366	22:45	91	377	68	268	159
					1498						645
11:00	243	182			425	23:00	67	54			121
11:15	241	159			400	23:15	59	35			94
11:30	244	203			447	23:30	48	32			80
11:45	220	948	217	761	437	23:45	68	242	43	164	111
					1709						406
<b>TOTALS</b>	<b>9032</b>	<b>4537</b>			<b>13569</b>	<b>TOTALS</b>	<b>8387</b>	<b>7692</b>			<b>16079</b>
<b>SPLIT %</b>	<b>66.6%</b>	<b>33.4%</b>			<b>45.8%</b>	<b>SPLIT %</b>	<b>52.2%</b>	<b>47.8%</b>			<b>54.2%</b>

DAILY TOTALS					NB	SB	EB	WB	Total
					17,419	12,229	0	0	29,648
AM Peak Hour	07:45	11:30			07:30	PM Peak Hour	12:15	16:45	16:45
AM Pk Volume	1456	862			1962	PM Pk Volume	1122	1308	2086
Pk Hr Factor	0.858	0.826			0.905	Pk Hr Factor	0.964	0.967	0.969
7 - 9 Volume	2726	1000	0	0	3726	4 - 6 Volume	1587	2347	3934
7 - 9 Peak Hour	07:45	08:00			07:30	4 - 6 Peak Hour	16:00	16:45	16:45
7 - 9 Pk Volume	1456	523	0	0	1962	4 - 6 Pk Volume	813	1308	2086
Pk Hr Factor	0.858	0.908	0.000	0.000	0.905	Pk Hr Factor	0.968	0.967	0.969



# VOLUME

Archibald Ave Bet. Riverside Dr & Chino Ave

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_012

DAILY TOTALS					NB	SB	EB	WB	Total		
					12,898	11,867	0	0	24,765		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	37	45			82	12:00	155	165			320
00:15	13	29			42	12:15	150	155			305
00:30	24	48			72	12:30	173	137			310
00:45	25	99	32	154	57	12:45	171	649	158	615	329
					253						1264
01:00	17	44			61	13:00	160	156			316
01:15	15	21			36	13:15	158	154			312
01:30	18	29			47	13:30	165	135			300
01:45	21	71	15	109	36	13:45	169	652	175	620	344
					180						1272
02:00	15	19			34	14:00	136	149			285
02:15	13	28			41	14:15	169	153			322
02:30	22	22			44	14:30	178	178			356
02:45	28	78	24	93	52	14:45	204	687	200	680	404
					171						1367
03:00	24	25			49	15:00	217	180			397
03:15	37	25			62	15:15	220	207			427
03:30	31	19			50	15:30	232	219			451
03:45	54	146	23	92	77	15:45	199	868	242	848	441
					238						1716
04:00	58	33			91	16:00	183	226			409
04:15	59	34			93	16:15	219	229			448
04:30	93	40			133	16:30	212	249			461
04:45	99	309	35	142	134	16:45	191	805	248	952	439
					451						1757
05:00	71	48			119	17:00	176	251			427
05:15	79	59			138	17:15	191	259			450
05:30	127	68			195	17:30	188	264			452
05:45	140	417	86	261	226	17:45	191	746	260	1034	451
					678						1780
06:00	140	80			220	18:00	187	234			421
06:15	173	107			280	18:15	156	209			365
06:30	212	151			363	18:30	167	230			397
06:45	250	775	122	460	372	18:45	203	713	201	874	404
					1235						1587
07:00	256	115			371	19:00	120	189			309
07:15	260	119			379	19:15	146	197			343
07:30	295	116			411	19:30	112	170			282
07:45	264	1075	89	439	353	19:45	124	502	173	729	297
					1514						1231
08:00	277	98			375	20:00	132	179			311
08:15	270	107			377	20:15	124	180			304
08:30	244	106			350	20:30	83	164			247
08:45	230	1021	124	435	354	20:45	92	431	163	686	255
					1456						1117
09:00	214	117			331	21:00	86	156			242
09:15	203	114			317	21:15	112	143			255
09:30	171	111			282	21:30	91	115			206
09:45	189	777	103	445	292	21:45	69	358	127	541	196
					1222						899
10:00	180	122			302	22:00	69	103			172
10:15	185	112			297	22:15	61	107			168
10:30	169	98			267	22:30	46	105			151
10:45	176	710	93	425	269	22:45	43	219	105	420	148
					1135						639
11:00	166	118			284	23:00	47	92			139
11:15	166	110			276	23:15	51	78			129
11:30	143	137			280	23:30	30	61			91
11:45	151	626	150	515	301	23:45	36	164	67	298	103
					1141						462
<b>TOTALS</b>	<b>6104</b>	<b>3570</b>			<b>9674</b>	<b>TOTALS</b>	<b>6794</b>	<b>8297</b>			<b>15091</b>
<b>SPLIT %</b>	<b>63.1%</b>	<b>36.9%</b>			<b>39.1%</b>	<b>SPLIT %</b>	<b>45.0%</b>	<b>55.0%</b>			<b>60.9%</b>

DAILY TOTALS					NB	SB	EB	WB	Total
					12,898	11,867	0	0	24,765

AM Peak Hour	07:30	11:30			06:45	PM Peak Hour	14:45	17:00			17:00
AM Pk Volume	1106	607			1533	PM Pk Volume	873	1034			1780
Pk Hr Factor	0.937	0.920			0.932	Pk Hr Factor	0.941	0.979			0.985
7 - 9 Volume	2096	874	0	0	2970	4 - 6 Volume	1551	1986	0	0	3537
7 - 9 Peak Hour	07:30	07:00			07:15	4 - 6 Peak Hour	16:00	17:00			17:00
7 - 9 Pk Volume	1106	439	0	0	1518	4 - 6 Pk Volume	805	1034	0	0	1780
Pk Hr Factor	0.937	0.922	0.000	0.000	0.923	Pk Hr Factor	0.919	0.979	0.000	0.000	0.985



# VOLUME

Archibald Ave Bet. Edison Ave & Eucalyptus Ave

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_013

DAILY TOTALS					NB	SB	EB	WB	Total		
					13,215	12,193	0	0	25,408		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	28	34			62	12:00	137	143			280
00:15	19	28			47	12:15	179	144			323
00:30	14	44			58	12:30	153	138			291
00:45	20	81	29	135	49	12:45	154	623	151	576	305
01:00	6	28			34	13:00	162	165			327
01:15	13	21			34	13:15	137	140			277
01:30	12	27			39	13:30	163	149			312
01:45	24	55	27	103	51	13:45	154	616	159	613	313
02:00	11	20			31	14:00	182	146			328
02:15	11	29			40	14:15	181	183			364
02:30	23	26			49	14:30	194	163			357
02:45	25	70	18	93	43	14:45	246	803	185	677	431
03:00	22	28			50	15:00	232	169			401
03:15	41	12			53	15:15	233	217			450
03:30	34	22			56	15:30	251	228			479
03:45	47	144	31	93	78	15:45	219	935	265	879	484
04:00	47	32			79	16:00	205	248			453
04:15	65	35			100	16:15	228	263			491
04:30	83	51			134	16:30	225	272			497
04:45	79	274	55	173	134	16:45	231	889	287	1070	518
05:00	77	61			138	17:00	166	263			429
05:15	88	89			177	17:15	206	295			501
05:30	155	96			251	17:30	191	288			479
05:45	155	475	109	355	264	17:45	161	724	282	1128	443
06:00	164	114			278	18:00	158	227			385
06:15	187	127			314	18:15	167	218			385
06:30	232	172			404	18:30	154	234			388
06:45	293	876	153	566	446	18:45	147	626	210	889	357
07:00	292	155			447	19:00	122	195			317
07:15	289	173			462	19:15	124	149			273
07:30	360	162			522	19:30	99	143			242
07:45	351	1292	151	641	502	19:45	108	453	153	640	261
08:00	306	140			446	20:00	115	118			233
08:15	331	116			447	20:15	83	152			235
08:30	272	125			397	20:30	84	126			210
08:45	246	1155	140	521	386	20:45	71	353	140	536	211
09:00	202	130			332	21:00	89	124			213
09:15	229	107			336	21:15	89	118			207
09:30	179	140			319	21:30	75	113			188
09:45	170	780	109	486	279	21:45	67	320	101	456	168
10:00	210	110			320	22:00	75	98			173
10:15	165	109			274	22:15	46	102			148
10:30	174	115			289	22:30	33	81			114
10:45	143	692	119	453	262	22:45	40	194	82	363	122
11:00	154	125			279	23:00	30	64			94
11:15	168	119			287	23:15	42	51			93
11:30	159	141			300	23:30	33	58			91
11:45	161	642	134	519	295	23:45	38	143	55	228	93
<b>TOTALS</b>	<b>6536</b>	<b>4138</b>			<b>10674</b>	<b>TOTALS</b>	<b>6679</b>	<b>8055</b>			<b>14734</b>
<b>SPLIT %</b>	<b>61.2%</b>	<b>38.8%</b>			<b>42.0%</b>	<b>SPLIT %</b>	<b>45.3%</b>	<b>54.7%</b>			<b>58.0%</b>

DAILY TOTALS					NB	SB	EB	WB	Total		
					13,215	12,193	0	0	25,408		
AM Peak Hour	07:30	06:30			07:00	PM Peak Hour	14:45	16:45	16:00		
AM Pk Volume	1348	653			1933	PM Pk Volume	962	1133	1959		
Pk Hr Factor	0.936	0.944			0.926	Pk Hr Factor	0.958	0.960	0.945		
7 - 9 Volume	2447	1162	0	0	3609	4 - 6 Volume	1613	2198	0	0	3811
7 - 9 Peak Hour	07:30	07:00			07:00	4 - 6 Peak Hour	16:00	16:45			16:00
7 - 9 Pk Volume	1348	641	0	0	1933	4 - 6 Pk Volume	889	1133	0	0	1959
Pk Hr Factor	0.936	0.926	0.000	0.000	0.926	Pk Hr Factor	0.962	0.960	0.000	0.000	0.945

# VOLUME

Archibald Ave Bet. 65th St & Schleisman Rd

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_014

DAILY TOTALS					NB	SB	EB	WB	Total		
					11,774	13,708	0	0	25,482		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	26	29			55	12:00	142	167			309
00:15	17	20			37	12:15	177	158			335
00:30	36	27			63	12:30	169	179			348
00:45	11	90	22	98	33 188	12:45	129	617	167	671	296 1288
01:00	11	19			30	13:00	144	176			320
01:15	7	21			28	13:15	150	183			333
01:30	10	32			42	13:30	116	207			323
01:45	14	42	18	90	32 132	13:45	138	548	206	772	344 1320
02:00	9	21			30	14:00	203	184			387
02:15	14	15			29	14:15	204	149			353
02:30	16	20			36	14:30	208	188			396
02:45	13	52	15	71	28 123	14:45	227	842	209	730	436 1572
03:00	14	16			30	15:00	235	175			410
03:15	16	16			32	15:15	208	207			415
03:30	18	17			35	15:30	218	204			422
03:45	24	72	37	86	61 158	15:45	218	879	222	808	440 1687
04:00	22	37			59	16:00	189	252			441
04:15	36	83			119	16:15	217	254			471
04:30	41	112			153	16:30	200	228			428
04:45	50	149	133	365	183 514	16:45	201	807	260	994	461 1801
05:00	38	156			194	17:00	175	263			438
05:15	65	193			258	17:15	189	264			453
05:30	88	197			285	17:30	216	233			449
05:45	91	282	156	702	247 984	17:45	191	771	251	1011	442 1782
06:00	117	141			258	18:00	183	240			423
06:15	141	192			333	18:15	177	212			389
06:30	161	219			380	18:30	187	238			425
06:45	186	605	176	728	362 1333	18:45	175	722	194	884	369 1606
07:00	188	198			386	19:00	166	189			355
07:15	221	222			443	19:15	161	143			304
07:30	262	224			486	19:30	142	158			300
07:45	211	882	176	820	387 1702	19:45	147	616	172	662	319 1278
08:00	220	171			391	20:00	104	116			220
08:15	231	174			405	20:15	125	138			263
08:30	176	189			365	20:30	116	147			263
08:45	158	785	172	706	330 1491	20:45	116	461	141	542	257 1003
09:00	171	194			365	21:00	108	109			217
09:15	144	125			269	21:15	110	135			245
09:30	145	172			317	21:30	93	132			225
09:45	145	605	190	681	335 1286	21:45	89	400	114	490	203 890
10:00	147	159			306	22:00	105	98			203
10:15	155	156			311	22:15	86	79			165
10:30	125	150			275	22:30	68	88			156
10:45	124	551	176	641	300 1192	22:45	58	317	72	337	130 654
11:00	141	181			322	23:00	31	50			81
11:15	124	145			269	23:15	30	52			82
11:30	137	136			273	23:30	46	40			86
11:45	140	542	175	637	315 1179	23:45	30	137	40	182	70 319
<b>TOTALS</b>	4657	5625			10282	<b>TOTALS</b>	7117	8083			15200
<b>SPLIT %</b>	45.3%	54.7%			40.4%	<b>SPLIT %</b>	46.8%	53.2%			59.6%

DAILY TOTALS					NB	SB	EB	WB	Total		
					11,774	13,708	0	0	25,482		
AM Peak Hour	07:30	06:45		07:15	PM Peak Hour	14:45	16:45		16:00		
AM Pk Volume	924	820		1707	PM Pk Volume	888	1020		1801		
Pk Hr Factor	0.882	0.915		0.878	Pk Hr Factor	0.945	0.966		0.956		
7 - 9 Volume	1667	1526	0	0	3193	4 - 6 Volume	1578	2005	0	0	3583
7 - 9 Peak Hour	07:30	07:00		07:15	4 - 6 Peak Hour	16:00	16:45				16:00
7 - 9 Pk Volume	924	820	0	0	1707	4 - 6 Pk Volume	807	1020	0	0	1801
Pk Hr Factor	0.882	0.915	0.000	0.000	0.878	Pk Hr Factor	0.930	0.966	0.000	0.000	0.956

**VOLUME**

Riverside Dr Bet. Turner Ave &amp; Clover Ln

Day: Thursday  
Date: 3/16/2017City: Ontario  
Project #: CA17\_6049\_015

DAILY TOTALS					NB	SB	EB	WB	Total					
					0	0	7,096	7,656	14,752					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			19	13	32	12:00			107	120	227			
00:15			11	26	37	12:15			99	106	205			
00:30			7	18	25	12:30			86	87	173			
00:45			10	47	15	72	12:45		102	394	87	400	189	794
01:00			7	9	16	13:00			95	108	203			
01:15			3	11	14	13:15			107	107	214			
01:30			6	8	14	13:30			102	106	208			
01:45			11	27	12	40	13:45		106	410	112	433	218	843
02:00			9	9	18	14:00			116	111	227			
02:15			4	10	14	14:15			106	91	197			
02:30			8	7	15	14:30			119	104	223			
02:45			6	27	6	32	14:45		129	470	135	441	264	911
03:00			3	13	16	15:00			131	107	238			
03:15			9	9	18	15:15			175	124	299			
03:30			7	10	17	15:30			157	118	275			
03:45			16	35	14	46	15:45		157	620	139	488	296	1108
04:00			13	15	28	16:00			169	134	303			
04:15			18	24	42	16:15			181	135	316			
04:30			25	37	62	16:30			156	156	312			
04:45			33	89	42	118	16:45		182	688	156	581	338	1269
05:00			15	96	111	17:00			191	158	349			
05:15			23	84	107	17:15			210	200	410			
05:30			35	79	114	17:30			194	148	342			
05:45			34	107	76	335	17:45		146	741	177	683	323	1424
06:00			28	78	106	18:00			152	143	295			
06:15			45	54	99	18:15			128	124	252			
06:30			57	83	140	18:30			125	152	277			
06:45			70	200	97	312	18:45		132	537	124	543	256	1080
07:00			50	98	148	19:00			112	105	217			
07:15			58	96	154	19:15			104	91	195			
07:30			90	103	193	19:30			102	99	201			
07:45			86	284	105	402	19:45		63	381	96	391	159	772
08:00			68	118	186	20:00			81	80	161			
08:15			93	104	197	20:15			73	74	147			
08:30			85	97	182	20:30			80	84	164			
08:45			80	326	105	424	20:45		81	315	81	319	162	634
09:00			93	95	188	21:00			68	89	157			
09:15			94	87	181	21:15			65	61	126			
09:30			66	75	141	21:30			53	74	127			
09:45			94	347	75	332	21:45		47	233	61	285	108	518
10:00			65	72	137	22:00			34	59	93			
10:15			64	82	146	22:15			25	53	78			
10:30			80	80	160	22:30			33	59	92			
10:45			84	293	76	310	22:45		13	105	44	215	57	320
11:00			79	83	162	23:00			25	19	44			
11:15			85	82	167	23:15			19	20	39			
11:30			86	99	185	23:30			21	16	37			
11:45			90	340	106	370	23:45		15	80	29	84	44	164
<b>TOTALS</b>			2122	2793	4915	<b>TOTALS</b>			4974	4863	9837			
<b>SPLIT %</b>			43.2%	56.8%	33.3%	<b>SPLIT %</b>			50.6%	49.4%	66.7%			

DAILY TOTALS					NB	SB	EB	WB	Total		
					0	0	7,096	7,656	14,752		
AM Peak Hour			11:30	11:30	11:30	PM Peak Hour			16:45	17:00	16:45
AM Pk Volume			382	431	813	PM Pk Volume			777	683	1439
Pk Hr Factor			0.893	0.898	0.895	Pk Hr Factor			0.925	0.854	0.877
7 - 9 Volume	0	0	610	826	1436	4 - 6 Volume	0	0	1429	1264	2693
7 - 9 Peak Hour			07:30	07:30	07:30	4 - 6 Peak Hour			16:45	17:00	16:45
7 - 9 Pk Volume	0	0	337	430	767	4 - 6 Pk Volume	0	0	777	683	1439
Pk Hr Factor	0.000	0.000	0.906	0.911	0.973	Pk Hr Factor	0.000	0.000	0.925	0.854	0.877

### VOLUME

Cantu-Galleano Ranch Rd Bet. Haven Ave & Hamner Ave

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_016

DAILY TOTALS					NB	SB	EB		WB	Total		
					0	0	5,938	5,911	11,849			
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL	
00:00			10	12	22	12:00			67	86	153	
00:15			10	6	16	12:15			77	72	149	
00:30			5	8	13	12:30			74	57	131	
00:45			10	35	4	30	12:45		64	282	69	284
01:00			5	9	14	65	13:00		72	83	155	
01:15			7	4	11	13:15			52	69	121	
01:30			12	5	17	13:30			63	81	144	
01:45			10	34	8	26	13:45		109	296	83	316
02:00			10	2	12	14:00			98	50	148	
02:15			7	7	14	14:15			137	81	218	
02:30			11	8	19	14:30			129	73	202	
02:45			14	42	10	27	14:45		134	498	52	256
03:00			16	14	30	15:00			175	77	252	
03:15			23	12	35	15:15			154	81	235	
03:30			13	16	29	15:30			152	69	221	
03:45			14	66	21	63	15:45		185	666	73	300
04:00			19	16	35	129	16:00		123	99	222	
04:15			18	29	47	16:15			138	75	213	
04:30			12	53	65	16:30			135	89	224	
04:45			17	66	107	205	16:45		120	516	94	357
05:00			37	117	154	17:00			136	94	230	
05:15			28	145	173	17:15			135	92	227	
05:30			37	160	197	17:30			122	99	221	
05:45			27	129	125	547	17:45		129	522	99	384
06:00			45	97	142	18:00			103	72	175	
06:15			60	116	176	18:15			126	58	184	
06:30			62	116	178	18:30			88	78	166	
06:45			73	240	120	449	18:45		75	392	49	257
07:00			93	103	196	19:00			68	50	118	
07:15			103	112	215	19:15			79	49	128	
07:30			91	118	209	19:30			69	51	120	
07:45			88	375	103	436	19:45		39	255	38	188
08:00			87	137	224	20:00			39	33	72	
08:15			89	112	201	20:15			43	43	86	
08:30			66	99	165	20:30			37	40	77	
08:45			92	334	105	453	20:45		33	152	45	161
09:00			66	109	175	21:00			37	34	71	
09:15			73	81	154	21:15			32	29	61	
09:30			85	80	165	21:30			25	45	70	
09:45			53	277	53	323	21:45		16	110	36	144
10:00			67	64	131	22:00			33	22	55	
10:15			63	64	127	22:15			20	29	49	
10:30			57	53	110	22:30			20	32	52	
10:45			50	237	56	237	22:45		22	95	17	100
11:00			55	88	143	23:00			18	17	35	
11:15			67	81	148	23:15			15	9	24	
11:30			72	76	148	23:30			14	17	31	
11:45			66	260	63	308	23:45		12	59	17	60
<b>TOTALS</b>			2095	3104	5199	<b>TOTALS</b>			3843	2807	6650	
<b>SPLIT %</b>			40.3%	59.7%	43.9%	<b>SPLIT %</b>			57.8%	42.2%	56.1%	

DAILY TOTALS					NB	SB	EB		WB	Total	
					0	0	5,938	5,911	11,849		
AM Peak Hour			07:00	05:00	07:15	PM Peak Hour			15:00	17:00	15:00
AM Pk Volume			375	547	839	PM Pk Volume			666	384	966
Pk Hr Factor			0.910	0.855	0.936	Pk Hr Factor			0.900	0.970	0.936
7 - 9 Volume	0	0	709	889	1598	4 - 6 Volume	0	0	1038	741	1779
7 - 9 Peak Hour			07:00	07:15	07:15	4 - 6 Peak Hour			16:15	17:00	17:00
7 - 9 Pk Volume	0	0	375	470	839	4 - 6 Pk Volume	0	0	529	384	906
Pk Hr Factor	0.000	0.000	0.910	0.858	0.936	Pk Hr Factor	0.000	0.000	0.958	0.970	0.985

### VOLUME

Limonte Ave Bet. Scholar Way & Hamner Ave

Day: Thursday  
Date: 3/23/2017

City: Ontario  
Project #: CA17\_6049\_017

DAILY TOTALS					NB	SB						Total		
					0	0						28,938		
							13,711		15,227					
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL		
00:00			35	33	68		12:00			233	193	426		
00:15			23	23	46		12:15			204	203	407		
00:30			25	30	55		12:30			205	188	393		
00:45			21	104	26	112	12:45			181	823	201	785	
01:00			15		37	52	13:00			181		199	380	
01:15			12		17	29	13:15			206		222	428	
01:30			9		21	30	13:30			193		208	401	
01:45			8	44	11	86	13:45			188	768	208	837	
02:00			13		14	27	14:00			203		173	376	
02:15			15		10	25	14:15			236		192	428	
02:30			12		17	29	14:30			182		188	370	
02:45			27	67	21	62	14:45			252	873	216	769	
03:00			20		25	45	15:00			294		189	483	
03:15			15		33	48	15:15			263		207	470	
03:30			24		34	58	15:30			254		183	437	
03:45			20	79	58	150	15:45			293	1104	194	773	
04:00			31		94	125	16:00			232		220	452	
04:15			42		121	163	16:15			249		208	457	
04:30			61		119	180	16:30			255		231	486	
04:45			51	185	174	508	16:45			238	974	234	893	
05:00			43		170	213	17:00			242		218	460	
05:15			66		146	212	17:15			245		213	458	
05:30			67		159	226	17:30			233		290	523	
05:45			71	247	217	692	17:45			263	983	257	978	
06:00			107		188	295	18:00			241		250	491	
06:15			115		194	309	18:15			268		247	515	
06:30			153		216	369	18:30			201		229	430	
06:45			189	564	186	784	18:45			184	894	230	956	
07:00			215		201	416	19:00			167		207	374	
07:15			224		166	390	19:15			156		252	408	
07:30			249		195	444	19:30			182		274	456	
07:45			243	931	176	738	19:45			140	645	250	983	
08:00			238		190	428	20:00			137		230	367	
08:15			230		180	410	20:15			142		267	409	
08:30			227		149	376	20:30			97		244	341	
08:45			181	876	149	668	20:45			116	492	210	951	
09:00			182		165	347	21:00			100		221	321	
09:15			216		158	374	21:15			88		208	296	
09:30			183		186	369	21:30			90		201	291	
09:45			202	783	166	675	21:45			58	336	190	820	
10:00			184		136	320	22:00			84		137	221	
10:15			207		200	407	22:15			65		141	206	
10:30			189		216	405	22:30			48		114	162	
10:45			184	764	163	715	22:45			51	248	92	484	
11:00			226		200	426	23:00			36		85	121	
11:15			171		182	353	23:15			30		86	116	
11:30			202		76	278	23:30			25		49	74	
11:45			210	809	63	521	23:45			27	118	67	287	
<b>TOTALS</b>			5453		5711		<b>TOTALS</b>			8258		9516		<b>17774</b>
<b>SPLIT %</b>			48.8%		51.2%		<b>SPLIT %</b>			46.5%		53.5%		<b>61.4%</b>

DAILY TOTALS					NB	SB						Total
					0	0						28,938
							13,711		15,227			
AM Peak Hour			07:30	05:45	07:30	PM Peak Hour			15:00	17:30	17:30	
AM Pk Volume			960	815	1701	PM Pk Volume			1104	1044	2049	
Pk Hr Factor			0.964	0.939	0.958	Pk Hr Factor			0.939	0.900	0.979	
7 - 9 Volume	0	0	1807	1406	3213	4 - 6 Volume	0	0	1957	1871	3828	
7 - 9 Peak Hour			07:30	07:30	07:30	4 - 6 Peak Hour			16:15	17:00	17:00	
7 - 9 Pk Volume	0	0	960	741	1701	4 - 6 Pk Volume	0	0	984	978	1961	
Pk Hr Factor	0.000	0.000	0.964	0.950	0.958	Pk Hr Factor	0.000	0.000	0.965	0.843	0.937	

**VOLUME**

Hamner Ave Bet. 65th St &amp; 68th St

Day: Thursday  
Date: 3/16/2017City: Ontario  
Project #: CA17\_6049\_018

DAILY TOTALS					NB	SB	EB	WB	Total		
					9,435	9,182	0	0	18,617		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	7	33			40	12:00	146	132			278
00:15	6	21			27	12:15	135	126			261
00:30	14	13			27	12:30	122	152			274
00:45	10	37	14	81	24	12:45	126	529	128	538	254
					118						1067
01:00	5	15			20	13:00	117	133			250
01:15	11	9			20	13:15	132	130			262
01:30	4	11			15	13:30	100	137			237
01:45	6	26	13	48	19	13:45	120	469	118	518	238
					74						987
02:00	2	6			8	14:00	116	132			248
02:15	5	6			11	14:15	131	131			262
02:30	7	9			16	14:30	163	158			321
02:45	7	21	8	29	15	14:45	146	556	173	594	319
					50						1150
03:00	5	9			14	15:00	236	202			438
03:15	10	7			17	15:15	219	178			397
03:30	7	7			14	15:30	228	203			431
03:45	8	30	12	35	20	15:45	181	864	158	741	339
					65						1605
04:00	9	12			21	16:00	176	199			375
04:15	17	14			31	16:15	159	168			327
04:30	31	18			49	16:30	177	193			370
04:45	16	73	15	59	31	16:45	177	689	196	756	373
					132						1445
05:00	33	10			43	17:00	191	190			381
05:15	24	26			50	17:15	207	217			424
05:30	43	22			65	17:30	226	189			415
05:45	46	146	24	82	70	17:45	179	803	183	779	362
					228						1582
06:00	41	34			75	18:00	202	173			375
06:15	90	53			143	18:15	201	198			399
06:30	90	64			154	18:30	174	141			315
06:45	105	326	75	226	180	18:45	131	708	168	680	299
					552						1388
07:00	145	129			274	19:00	154	148			302
07:15	158	155			313	19:15	123	153			276
07:30	236	120			356	19:30	125	154			279
07:45	217	756	113	517	330	19:45	104	506	126	581	230
					1273						1087
08:00	166	118			284	20:00	106	106			212
08:15	151	143			294	20:15	83	130			213
08:30	159	95			254	20:30	102	125			227
08:45	131	607	105	461	236	20:45	90	381	121	482	211
					1068						863
09:00	113	95			208	21:00	95	100			195
09:15	96	95			191	21:15	75	96			171
09:30	101	92			193	21:30	68	88			156
09:45	124	434	89	371	213	21:45	45	283	79	363	124
					805						646
10:00	105	86			191	22:00	49	76			125
10:15	135	84			219	22:15	44	77			121
10:30	120	109			229	22:30	33	54			87
10:45	109	469	112	391	221	22:45	25	151	44	251	69
					860						402
11:00	110	121			231	23:00	25	38			63
11:15	134	119			253	23:15	28	31			59
11:30	122	103			225	23:30	15	29			44
11:45	126	492	133	476	259	23:45	11	79	25	123	36
					968						202
<b>TOTALS</b>	<b>3417</b>	<b>2776</b>			<b>6193</b>	<b>TOTALS</b>	<b>6018</b>	<b>6406</b>			<b>12424</b>
<b>SPLIT %</b>	<b>55.2%</b>	<b>44.8%</b>			<b>33.3%</b>	<b>SPLIT %</b>	<b>48.4%</b>	<b>51.6%</b>			<b>66.7%</b>

DAILY TOTALS					NB	SB	EB	WB	Total		
					9,435	9,182	0	0	18,617		
AM Peak Hour	07:15	11:45			07:15	PM Peak Hour	15:00	16:30	15:00		
AM Pk Volume	777	543			1283	PM Pk Volume	864	796	1605		
Pk Hr Factor	0.823	0.893			0.901	Pk Hr Factor	0.915	0.917	0.916		
7 - 9 Volume	1363	978	0	0	2341	4 - 6 Volume	1492	1535	0	0	3027
7 - 9 Peak Hour	07:15	07:00			07:15	4 - 6 Peak Hour	17:00	16:30			16:45
7 - 9 Pk Volume	777	517	0	0	1283	4 - 6 Pk Volume	803	796	0	0	1593
Pk Hr Factor	0.823	0.834	0.000	0.000	0.901	Pk Hr Factor	0.888	0.917	0.000	0.000	0.939

### VOLUME

## Cantu-Galleano Ranch Rd W/O I-15 SB Ramps

Day: Thursday  
Date: 3/23/2017

City: Ontario  
Project #: CA17\_6049\_019

DAILY TOTALS					NB	SB						Total		
					0	0						18,981		
					9,920							9,061		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			29	35	64	12:00			128	91	219			
00:15			23	36	59	12:15			111	99	210			
00:30			25	25	50	12:30			127	120	247			
00:45			32	109	28	124	12:45		163	529	106	416	269	945
01:00			27	29	56	13:00			130	131	261			
01:15			22	41	63	13:15			129	136	265			
01:30			15	48	63	13:30			152	131	283			
01:45			17	81	28	146	13:45		145	556	141	539	286	1095
02:00			29	23	52	14:00			149	115	264			
02:15			37	17	54	14:15			135	138	273			
02:30			39	35	74	14:30			147	118	265			
02:45			38	143	48	123	14:45		176	607	121	492	297	1099
03:00			34	38	72	15:00			119	133	252			
03:15			28	44	72	15:15			158	116	274			
03:30			35	82	117	15:30			141	127	268			
03:45			71	168	118	282	15:45		133	551	120	496	253	1047
04:00			39	59	98	16:00			210	74	284			
04:15			57	60	117	16:15			217	84	301			
04:30			105	100	205	16:30			234	80	314			
04:45			179	380	159	378	16:45		198	859	79	317	277	1176
05:00			64	103	167	17:00			213	73	286			
05:15			55	138	193	17:15			188	87	275			
05:30			109	168	277	17:30			220	100	320			
05:45			121	349	212	621	17:45		182	803	110	370	292	1173
06:00			83	202	285	18:00			150	151	301			
06:15			105	208	313	18:15			121	124	245			
06:30			158	245	403	18:30			116	82	198			
06:45			180	526	244	899	18:45		89	476	86	443	175	919
07:00			136	97	233	19:00			92	95	187			
07:15			158	116	274	19:15			87	100	187			
07:30			161	81	242	19:30			93	95	188			
07:45			194	649	84	378	19:45		84	356	70	360	154	716
08:00			179	84	263	20:00			71	71	142			
08:15			189	69	258	20:15			90	74	164			
08:30			162	75	237	20:30			63	60	123			
08:45			147	677	83	311	20:45		61	285	84	289	145	574
09:00			85	164	249	21:00			70	92	162			
09:15			103	111	214	21:15			56	62	118			
09:30			101	105	206	21:30			58	67	125			
09:45			101	390	159	539	21:45		46	230	69	290	115	520
10:00			124	116	240	22:00			39	53	92			
10:15			107	125	232	22:15			46	52	98			
10:30			102	113	215	22:30			56	49	105			
10:45			106	439	113	467	22:45		32	173	71	225	103	398
11:00			101	86	187	23:00			39	64	103			
11:15			123	92	215	23:15			40	34	74			
11:30			101	113	214	23:30			46	38	84			
11:45			108	433	86	377	23:45		26	151	43	179	69	330
<b>TOTALS</b>			4344	4645	8989	<b>TOTALS</b>			5576	4416	9992			
<b>SPLIT %</b>			48.3%	51.7%	47.4%	<b>SPLIT %</b>			55.8%	44.2%	52.6%			

DAILY TOTALS					NB	SB						Total
					0	0						18,981
					9,920							9,061
AM Peak Hour			07:45	06:00	06:00	PM Peak Hour			16:15	13:00	17:15	
AM Pk Volume			724	899	1425	PM Pk Volume			862	539	1188	
Pk Hr Factor			0.933	0.917	0.840	Pk Hr Factor			0.921	0.956	0.928	
7 - 9 Volume	0	0	1326	689	2015	4 - 6 Volume	0	0	1662	687	2349	
7 - 9 Peak Hour			07:45	07:00	07:15	4 - 6 Peak Hour			16:15	17:00	16:15	
7 - 9 Pk Volume	0	0	724	378	1057	4 - 6 Pk Volume	0	0	862	370	1178	
Pk Hr Factor	0.000	0.000	0.933	0.815	0.951	Pk Hr Factor	0.000	0.000	0.921	0.841	0.938	



### VOLUME

## Limonite Ave Bet. I-15 SB Ramps & I-15 NB Ramps

Day: Thursday  
Date: 3/16/2017

City: Ontario  
Project #: CA17\_6049\_020

DAILY TOTALS					NB	SB						Total		
					0	0						42,615		
							21,164			21,451				
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL		
00:00			88	38	126		12:00			317	330	647		
00:15			66	39	105		12:15			309	360	669		
00:30			62	28	90		12:30			312	315	627		
00:45			46	262	25	130	71	392	354	1292	312	1317	666	2609
01:00			47	16	63		13:00			281	307	588		
01:15			51	24	75		13:15			351	314	665		
01:30			37	24	61		13:30			313	341	654		
01:45			33	168	19	83	52	251	314	1259	321	1283	635	2542
02:00			34	18	52		14:00			337	306	643		
02:15			33	14	47		14:15			339	322	661		
02:30			39	22	61		14:30			372	331	703		
02:45			33	139	19	73	52	212	323	1371	294	1253	617	2624
03:00			29	33	62		15:00			316	311	627		
03:15			30	46	76		15:15			345	326	671		
03:30			51	50	101		15:30			346	285	631		
03:45			33	143	87	216	120	359	333	1340	310	1232	643	2572
04:00			34	101	135		16:00			268	290	558		
04:15			71	174	245		16:15			289	321	610		
04:30			86	218	304		16:30			280	350	630		
04:45			103	294	203	696	306	990	313	1150	320	1281	633	2431
05:00			89	170	259		17:00			320	302	622		
05:15			98	241	339		17:15			325	328	653		
05:30			119	247	366		17:30			308	341	649		
05:45			117	423	203	861	320	1284	284	1237	356	1327	640	2564
06:00			176	253	429		18:00			320	339	659		
06:15			220	256	476		18:15			336	315	651		
06:30			266	248	514		18:30			326	295	621		
06:45			226	888	247	1004	473	1892	312	1294	293	1242	605	2536
07:00			285	294	579		19:00			328	331	659		
07:15			305	270	575		19:15			306	337	643		
07:30			291	309	600		19:30			314	294	608		
07:45			215	1096	278	1151	493	2247	303	1251	308	1270	611	2521
08:00			239	269	508		20:00			302	300	602		
08:15			269	290	559		20:15			296	247	543		
08:30			261	297	558		20:30			285	230	515		
08:45			273	1042	276	1132	549	2174	280	1163	234	1011	514	2174
09:00			239	236	475		21:00			304	212	516		
09:15			255	276	531		21:15			266	225	491		
09:30			259	284	543		21:30			222	185	407		
09:45			257	1010	271	1067	528	2077	205	997	162	784	367	1781
10:00			278	288	566		22:00			178	124	302		
10:15			253	263	516		22:15			198	112	310		
10:30			328	292	620		22:30			165	105	270		
10:45			273	1132	306	1149	579	2281	132	673	82	423	214	1096
11:00			247	272	519		23:00			125	60	185		
11:15			291	304	595		23:15			92	61	153		
11:30			326	351	677		23:30			87	46	133		
11:45			293	1157	327	1254	620	2411	79	383	45	212	124	595
<b>TOTALS</b>			7754	8816	16570		<b>TOTALS</b>			13410	12635	26045		
<b>SPLIT %</b>			46.8%	53.2%	38.9%		<b>SPLIT %</b>			51.5%	48.5%	61.1%		

DAILY TOTALS					NB	SB						Total
					0	0						42,615
							21,164			21,451		

AM Peak Hour			11:30	11:30	11:30		PM Peak Hour			14:00	17:15	13:45
AM Pk Volume			1245	1368	2613		PM Pk Volume			1371	1364	2642
Pk Hr Factor			0.955	0.950	0.965		Pk Hr Factor			0.921	0.958	0.940
7 - 9 Volume	0	0	2138	2283	4421		4 - 6 Volume	0	0	2387	2608	4995
7 - 9 Peak Hour			07:00	07:00	07:00		4 - 6 Peak Hour			16:45	17:00	17:00
7 - 9 Pk Volume	0	0	1096	1151	2247		4 - 6 Pk Volume	0	0	1266	1327	2564
Pk Hr Factor	0.000	0.000	0.898	0.931	0.936		Pk Hr Factor	0.000	0.000	0.974	0.932	0.982



## **APPENDIX B**

### **Level of Service Computation Reports (HCM2010)**

\* Archibald Avenue & Eucalyptus Avenue intersection identified as Intersection 48 in the report is identified as Intersection 66 in the following Appendix.

**EXISTING (2017) NO PROJECT AM/PM PEAK HOUR**

**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.671

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	138	883	163	56	862	98	109	313	128	179	437	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	883	163	56	862	98	109	313	128	179	437	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	221	41	14	216	25	27	78	32	45	109	23
Total Analysis Volume [veh/h]	138	883	163	56	862	98	109	313	128	179	437	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	25	0	10	21	0	9	22	0	13	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	9	26	26	6	22	22	33	23	23	33	25
g / C, Green / Cycle	0.12	0.36	0.36	0.08	0.32	0.32	0.47	0.33	0.33	0.47	0.35
(v / s)_i Volume / Saturation Flow Rate	0.09	0.28	0.11	0.04	0.20	0.20	0.11	0.14	0.14	0.17	0.31
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1656	967	1676	1515	1057	1692
c, Capacity [veh/h]	198	1163	519	128	1022	530	347	546	493	525	592
d1, Uniform Delay [s]	29.40	19.55	15.97	30.71	20.16	20.18	16.17	18.46	18.51	13.77	21.53
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.25
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.39	4.68	1.58	2.36	2.79	5.37	0.51	0.52	0.59	0.38	10.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

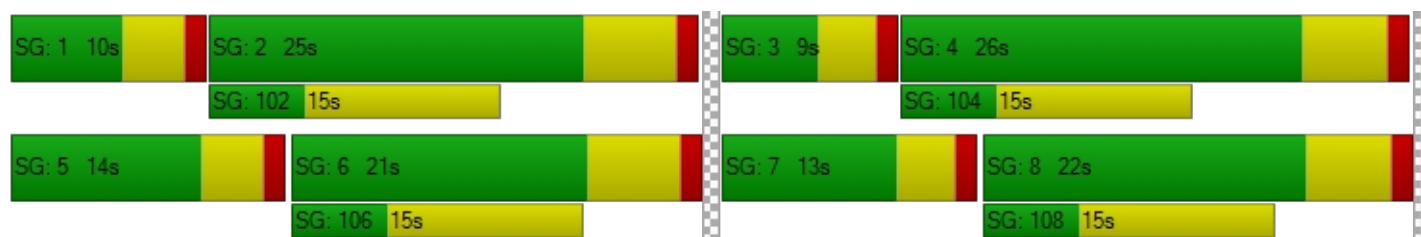
X, volume / capacity	0.70	0.76	0.31	0.44	0.62	0.62	0.31	0.42	0.43	0.34	0.89
d, Delay for Lane Group [s/veh]	33.79	24.24	17.55	33.07	22.95	25.55	16.69	18.97	19.10	14.15	32.12
Lane Group LOS	C	C	B	C	C	C	B	B	B	B	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.31	6.26	1.89	0.93	4.28	4.85	0.97	2.67	2.48	1.65	8.89
50th-Percentile Queue Length [ft]	57.79	156.59	47.21	23.22	107.05	121.18	24.34	66.86	61.92	41.21	222.30
95th-Percentile Queue Length [veh]	4.16	10.37	3.40	1.67	7.68	8.46	1.75	4.81	4.46	2.97	13.78
95th-Percentile Queue Length [ft]	104.02	259.20	84.98	41.80	191.90	211.45	43.81	120.34	111.45	74.18	344.56

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.79	24.24	17.55	33.07	23.65	25.55	16.69	19.01	19.10	14.15	32.12	32.12
Movement LOS	C	C	B	C	C	C	B	B	B	B	C	C
d_A, Approach Delay [s/veh]	24.43			24.35			18.57			27.57		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	24.12											
Intersection LOS	C											
Intersection V/C	0.671											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.463

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	188	915	188	77	671	80	136	209	247	76	144	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	915	188	77	671	80	136	209	247	76	144	80
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	229	47	19	168	20	34	52	62	19	36	20
Total Analysis Volume [veh/h]	188	915	188	77	671	80	136	209	247	76	144	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	30	0	10	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	7	34	34	6	33	33	24	16	16	24	15	15
g / C, Green / Cycle	0.11	0.49	0.49	0.09	0.47	0.47	0.34	0.23	0.23	0.34	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.23	0.23	0.02	0.16	0.16	0.11	0.12	0.17	0.07	0.07	0.07
s, saturation flow rate [veh/h]	3101	3192	1534	3101	3192	1587	1224	1676	1482	1057	1676	1546
c, Capacity [veh/h]	333	1551	746	271	1487	739	483	383	339	358	356	328
d1, Uniform Delay [s]	29.68	12.06	12.06	29.90	11.84	11.87	19.29	23.80	25.00	19.29	23.28	23.38
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.50	1.07	2.21	0.57	0.61	1.25	0.32	1.21	3.02	0.29	0.51	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

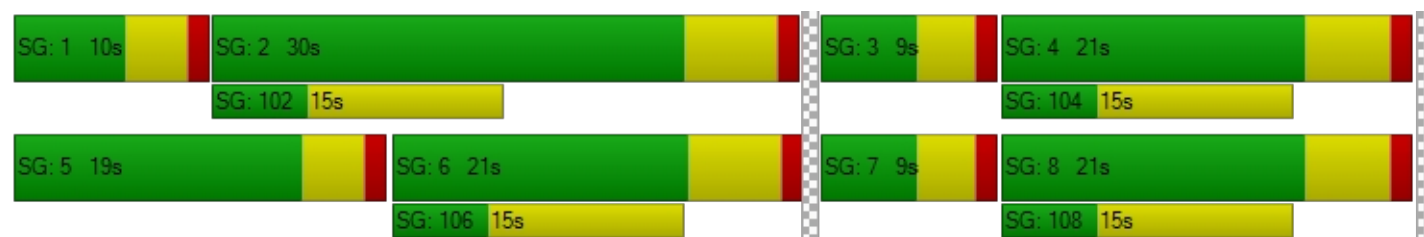
X, volume / capacity	0.56	0.48	0.48	0.28	0.34	0.34	0.28	0.55	0.73	0.21	0.32	0.34
d, Delay for Lane Group [s/veh]	31.17	13.13	14.28	30.47	12.46	13.11	19.61	25.01	28.03	19.58	23.79	23.98
Lane Group LOS	C	B	B	C	B	B	B	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.45	3.35	3.46	0.58	2.14	2.29	1.59	2.91	3.74	0.86	1.51	1.48
50th-Percentile Queue Length [ft]	36.26	83.70	86.51	14.54	53.57	57.14	39.80	72.86	93.55	21.52	37.69	37.04
95th-Percentile Queue Length [veh]	2.61	6.03	6.23	1.05	3.86	4.11	2.87	5.25	6.74	1.55	2.71	2.67
95th-Percentile Queue Length [ft]	65.27	150.66	155.73	26.17	96.43	102.85	71.64	131.15	168.40	38.74	67.85	66.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.17	13.34	14.28	30.47	12.62	13.11	19.61	25.01	28.03	19.58	23.83	23.98
Movement LOS	C	B	B	C	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	16.07			14.33			25.03			22.80		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.02											
Intersection LOS	B											
Intersection V/C	0.463											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	16.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.253

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	372	670	219	34	212	27	23	117	84	71	254	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	372	670	219	34	212	27	23	117	84	71	254	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	168	55	9	53	7	6	29	21	18	64	10
Total Analysis Volume [veh/h]	372	670	219	34	212	27	23	117	84	71	254	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.0	3.2	4.8	3.0	3.0	4.4	3.2	3.0	4.4	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	24	9	10	21	15	15	27	13	9	21	10
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	11	43	51	5	37	43	4	8	21	6	10	17
g / C, Green / Cycle	0.16	0.62	0.73	0.07	0.53	0.61	0.05	0.12	0.30	0.08	0.15	0.24
(v / s)_i Volume / Saturation Flow Rate	0.12	0.15	0.15	0.01	0.05	0.02	0.01	0.04	0.06	0.02	0.08	0.03
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	487	2820	998	205	2405	828	170	381	390	256	470	300
d1, Uniform Delay [s]	28.25	6.00	3.72	30.86	8.23	6.25	31.50	28.17	19.61	30.15	27.66	22.45
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.52	0.20	0.51	0.38	0.07	0.02	0.36	0.45	0.27	0.58	0.97	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.76	0.24	0.22	0.17	0.09	0.03	0.14	0.31	0.22	0.28	0.54	0.13
d, Delay for Lane Group [s/veh]	30.77	6.20	4.23	31.24	8.30	6.27	31.86	28.62	19.89	30.73	28.62	22.64
Lane Group LOS	C	A	A	C	A	A	C	C	B	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.93	1.12	0.78	0.27	0.45	0.14	0.18	0.86	0.99	0.55	1.89	0.51
50th-Percentile Queue Length [ft]	73.22	28.02	19.58	6.64	11.25	3.39	4.57	21.54	24.82	13.69	47.30	12.79
95th-Percentile Queue Length [veh]	5.27	2.02	1.41	0.48	0.81	0.24	0.33	1.55	1.79	0.99	3.41	0.92
95th-Percentile Queue Length [ft]	131.80	50.44	35.24	11.95	20.25	6.10	8.22	38.76	44.68	24.65	85.14	23.02

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.77	6.20	4.23	31.24	8.30	6.27	31.86	28.62	19.89	30.73	28.62	22.64
Movement LOS	C	A	A	C	A	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	13.11			10.96			25.68			28.38		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	16.78											
Intersection LOS	B											
Intersection V/C	0.253											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	279	831	0	0	803	454	0	0	0	450	0	398
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	279	831	0	0	803	454	0	0	0	450	0	398
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	208	0	0	201	114	0	0	0	113	0	100
Total Analysis Volume [veh/h]	279	831	0	0	803	454	0	0	0	450	0	398
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	22	43	0	0	21	0	0	0	0	0	17	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	13	41	26	26		15	15	15
g / C, Green / Cycle	0.22	0.68	0.43	0.43		0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.17	0.26	0.25	0.32		0.18	0.19	0.19
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1517	1425
c, Capacity [veh/h]	357	2181	1361	608		399	379	356
d1, Uniform Delay [s]	21.91	4.07	13.19	14.48		20.62	20.75	20.91
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	3.76	0.51	1.88	8.17		2.54	2.95	3.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

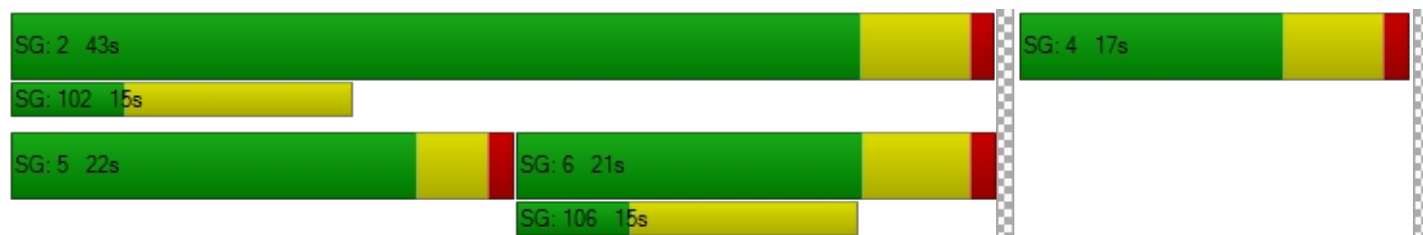
X, volume / capacity	0.78	0.38	0.59	0.75		0.73	0.75	0.77
d, Delay for Lane Group [s/veh]	25.67	4.57	15.07	22.65		23.16	23.69	24.47
Lane Group LOS	C	A	B	C		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	3.62	1.24	3.69	5.52		3.53	3.50	3.47
50th-Percentile Queue Length [ft]	90.57	31.09	92.19	137.91		88.21	87.51	86.79
95th-Percentile Queue Length [veh]	6.52	2.24	6.64	9.37		6.35	6.30	6.25
95th-Percentile Queue Length [ft]	163.02	55.95	165.95	234.20		158.77	157.52	156.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	25.67	4.57	0.00	0.00	15.07	22.65	0.00	0.00	0.00	23.35	23.69	24.24
Movement LOS	C	A			B	C				C	C	C
d_A, Approach Delay [s/veh]	9.88		17.81			0.00			23.76			
Approach LOS	A		B			A			C			
d_I, Intersection Delay [s/veh]	16.64											
Intersection LOS	B											
Intersection V/C	0.686											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	16.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							+					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	715	478	273	957	0	390	2	278	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	715	478	273	957	0	390	2	278	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	179	120	68	239	0	98	1	70	0	0	0
Total Analysis Volume [veh/h]	0	715	478	273	957	0	390	2	278	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	26	0	16	42	0	0	18	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	25	25	13	40	16	16	
g / C, Green / Cycle	0.42	0.42	0.22	0.67	0.27	0.27	
(v / s)_j Volume / Saturation Flow Rate	0.22	0.32	0.17	0.30	0.22	0.22	
s, saturation flow rate [veh/h]	3192	1482	1597	3192	1597	1446	
c, Capacity [veh/h]	1332	619	345	2128	426	386	
d1, Uniform Delay [s]	13.12	15.03	22.25	4.76	20.65	20.73	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.55	9.09	4.11	0.69	3.98	4.68	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

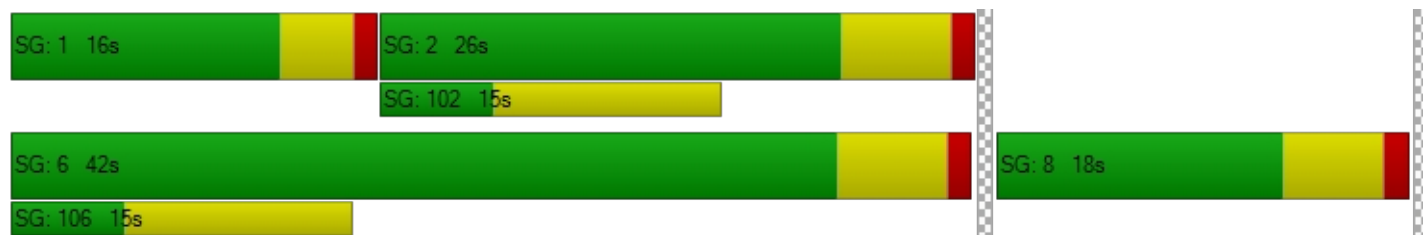
X, volume / capacity	0.54	0.77	0.79	0.45	0.82	0.83	
d, Delay for Lane Group [s/veh]	14.68	24.12	26.35	5.45	24.64	25.41	
Lane Group LOS	B	C	C	A	C	C	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	3.22	6.05	3.60	1.72	4.45	4.16	
50th-Percentile Queue Length [ft]	80.44	151.23	90.04	42.98	111.13	104.03	
95th-Percentile Queue Length [veh]	5.79	10.08	6.48	3.09	7.90	7.49	
95th-Percentile Queue Length [ft]	144.79	252.08	162.07	77.37	197.57	187.25	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	14.68	24.12	26.35	5.45	0.00	24.74	25.41	25.41	0.00	0.00	0.00
Movement LOS		B	C	C	A		C	C	C			
d_A, Approach Delay [s/veh]	18.46			10.09			25.01			0.00		
Approach LOS	B			B			C			A		
d_I, Intersection Delay [s/veh]	16.55											
Intersection LOS	B											
Intersection V/C	0.715											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵						↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	199	981	0	0	604	445	0	0	0	182	1	430
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	199	981	0	0	604	445	0	0	0	182	1	430
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	245	0	0	151	111	0	0	0	46	0	108
Total Analysis Volume [veh/h]	199	981	0	0	604	445	0	0	0	182	1	430
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	12	38	0	0	26	0	0	0	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	10	36	24	24		20	20
g / C, Green / Cycle	0.17	0.60	0.40	0.40		0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.12	0.31	0.19	0.31		0.11	0.30
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	266	1915	1277	570		532	475
d1, Uniform Delay [s]	23.80	6.93	13.32	15.70		15.06	19.10
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	4.18	0.98	1.26	10.19		0.38	9.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

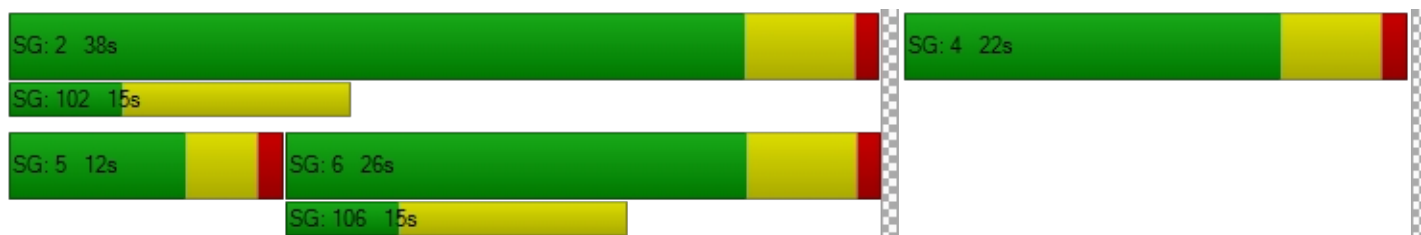
X, volume / capacity	0.75	0.51	0.47	0.78		0.34	0.91
d, Delay for Lane Group [s/veh]	27.98	7.91	14.58	25.89		15.44	28.56
Lane Group LOS	C	A	B	C		B	C
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	2.66	2.46	2.62	5.78		1.66	6.04
50th-Percentile Queue Length [ft]	66.40	61.44	65.50	144.43		41.58	150.88
95th-Percentile Queue Length [veh]	4.78	4.42	4.72	9.72		2.99	10.06
95th-Percentile Queue Length [ft]	119.52	110.60	117.91	242.98		74.84	251.60

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.98	7.91	0.00	0.00	14.58	25.89	0.00	0.00	0.00	15.44	15.44	28.56
Movement LOS	C	A			B	C				B	B	C
d_A, Approach Delay [s/veh]	11.30			19.38			0.00			24.64		
Approach LOS	B			B			A			C		
d_I, Intersection Delay [s/veh]	17.16											
Intersection LOS	B											
Intersection V/C	0.739											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	24.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.791

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	578	242	251	543	0	597	0	148	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	578	242	251	543	0	597	0	148	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	145	61	63	136	0	149	0	37	0	0	0
Total Analysis Volume [veh/h]	0	578	242	251	543	0	597	0	148	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	13	34	0	0	26	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	19	19	11	32	24	24	
g / C, Green / Cycle	0.32	0.32	0.18	0.53	0.40	0.40	
(v / s)_j Volume / Saturation Flow Rate	0.24	0.26	0.16	0.17	0.37	0.10	
s, saturation flow rate [veh/h]	1676	1579	1597	3192	1597	1425	
c, Capacity [veh/h]	531	500	293	1702	639	570	
d1, Uniform Delay [s]	18.54	18.92	23.74	7.87	17.25	12.05	
k, delay calibration	0.50	0.50	0.11	0.50	0.27	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	10.44	13.98	7.19	0.49	14.40	0.24	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

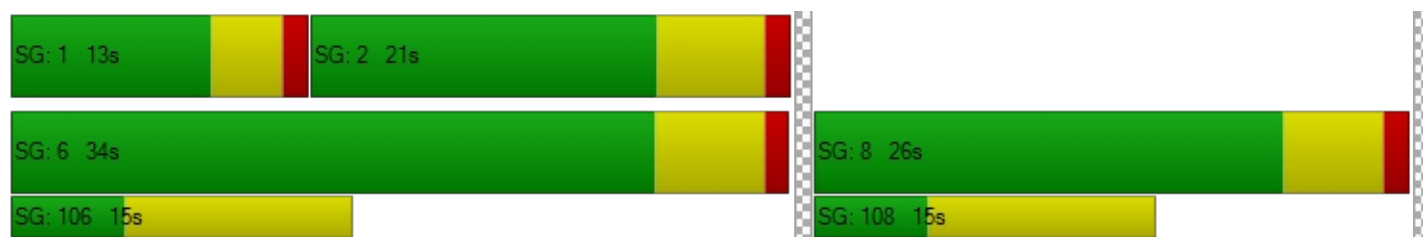
X, volume / capacity	0.77	0.82	0.86	0.32	0.93	0.26	
d, Delay for Lane Group [s/veh]	28.98	32.90	30.93	8.37	31.65	12.29	
Lane Group LOS	C	C	C	A	C	B	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	5.91	6.40	3.58	1.50	8.91	1.14	
50th-Percentile Queue Length [ft]	147.72	160.01	89.41	37.38	222.68	28.45	
95th-Percentile Queue Length [veh]	9.90	10.55	6.44	2.69	13.80	2.05	
95th-Percentile Queue Length [ft]	247.38	263.74	160.94	67.28	345.04	51.22	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	30.12	32.90	30.93	8.37	0.00	31.65	31.65	12.29	0.00	0.00	0.00
Movement LOS		C	C	C	A		C	C	B			
d_A, Approach Delay [s/veh]	30.94			15.50			27.80			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	24.75											
Intersection LOS	C											
Intersection V/C	0.791											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	476	1012	0	0	279	104	0	0	0	253	2	383
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	476	1012	0	0	279	104	0	0	0	253	2	383
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	119	253	0	0	70	26	0	0	0	63	1	96
Total Analysis Volume [veh/h]	476	1012	0	0	279	104	0	0	0	253	2	383
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	28	39	0	0	11	0	0	0	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	21	37	14	14		19	19
g / C, Green / Cycle	0.34	0.62	0.24	0.24		0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.30	0.22	0.08	0.09		0.16	0.27
s, saturation flow rate [veh/h]	1597	4567	3192	1466		1597	1425
c, Capacity [veh/h]	550	2816	762	350		506	451
d1, Uniform Delay [s]	18.36	5.66	18.90	19.04		16.67	19.16
k, delay calibration	0.15	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	5.91	0.36	1.19	2.92		0.78	4.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

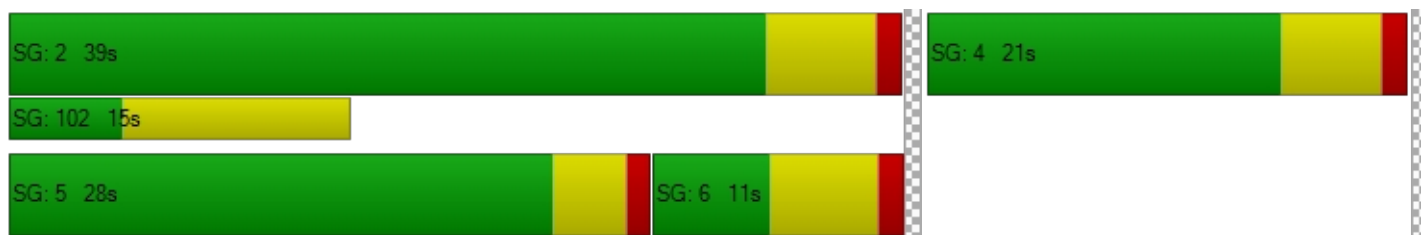
X, volume / capacity	0.87	0.36	0.34	0.36		0.50	0.85
d, Delay for Lane Group [s/veh]	24.27	6.02	20.08	21.97		17.45	23.81
Lane Group LOS	C	A	C	C		B	C
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	6.05	1.42	1.42	1.59		2.55	4.80
50th-Percentile Queue Length [ft]	151.34	35.39	35.54	39.76		63.81	120.02
95th-Percentile Queue Length [veh]	10.09	2.55	2.56	2.86		4.59	8.39
95th-Percentile Queue Length [ft]	252.21	63.70	63.97	71.57		114.86	209.85

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.27	6.02	0.00	0.00	20.24	21.97	0.00	0.00	0.00	17.45	17.45	23.81
Movement LOS	C	A			C	C				B	B	C
d_A, Approach Delay [s/veh]	11.86			20.71			0.00			21.27		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	15.60											
Intersection LOS	B											
Intersection V/C	0.654											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	13.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	1157	337	76	451	0	319	1	295	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1157	337	76	451	0	319	1	295	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	289	84	19	113	0	80	0	74	0	0	0
Total Analysis Volume [veh/h]	0	1157	337	76	451	0	319	1	295	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	29	0	14	43	0	0	17	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	33	33	6	41	15	15	
g / C, Green / Cycle	0.55	0.55	0.10	0.68	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.31	0.33	0.05	0.10	0.20	0.21	
s, saturation flow rate [veh/h]	3192	1498	1597	4567	1597	1425	
c, Capacity [veh/h]	1756	824	159	3121	399	356	
d1, Uniform Delay [s]	8.82	9.09	25.53	3.34	21.10	21.28	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.33	3.28	2.21	0.10	3.78	4.94	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

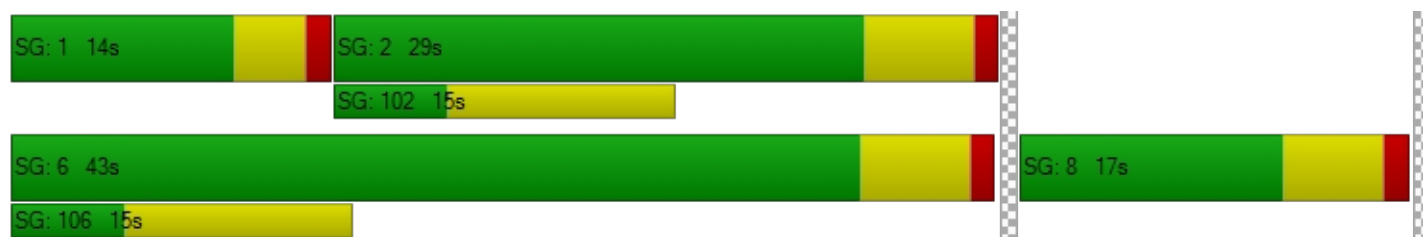
X, volume / capacity	0.57	0.60	0.48	0.14	0.80	0.83	
d, Delay for Lane Group [s/veh]	10.15	12.37	27.74	3.44	24.88	26.22	
Lane Group LOS	B	B	C	A	C	C	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	3.32	3.83	1.03	0.35	4.09	3.90	
50th-Percentile Queue Length [ft]	82.89	95.80	25.77	8.79	102.13	97.44	
95th-Percentile Queue Length [veh]	5.97	6.90	1.86	0.63	7.35	7.02	
95th-Percentile Queue Length [ft]	149.21	172.45	46.39	15.83	183.84	175.39	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	10.46	12.37	27.74	3.44	0.00	24.88	24.88	26.22	0.00	0.00	0.00
Movement LOS		B	B	C	A		C	C	C			
d_A, Approach Delay [s/veh]		10.89		6.94			25.52			0.00		
Approach LOS		B		A			C			A		
d_I, Intersection Delay [s/veh]	13.52											
Intersection LOS	B											
Intersection V/C	0.587											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.477

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TTT			TTTTT			TTT			TTT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	121	840	54	152	899	47	126	265	93	61	278	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	840	54	152	899	47	126	265	93	61	278	182
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	210	14	38	225	12	32	66	23	15	70	46
Total Analysis Volume [veh/h]	121	840	54	152	899	47	126	265	93	61	278	182
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	29	0	10	21	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	28	28	7	27	27	19	19	19	19	19	19
g / C, Green / Cycle	0.13	0.47	0.47	0.11	0.46	0.46	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.09	0.21	0.21	0.06	0.22	0.04	0.17	0.12	0.13	0.07	0.16	0.17
s, saturation flow rate [veh/h]	1416	2831	1441	2750	4050	1264	741	1487	1358	814	1487	1296
c, Capacity [veh/h]	180	1329	677	314	1849	577	241	471	430	283	471	410
d1, Uniform Delay [s]	25.01	10.68	10.69	24.93	11.39	9.21	25.31	16.00	16.05	20.72	16.74	16.83
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.33	1.08	2.13	1.16	0.92	0.28	1.76	0.53	0.61	0.38	0.87	1.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

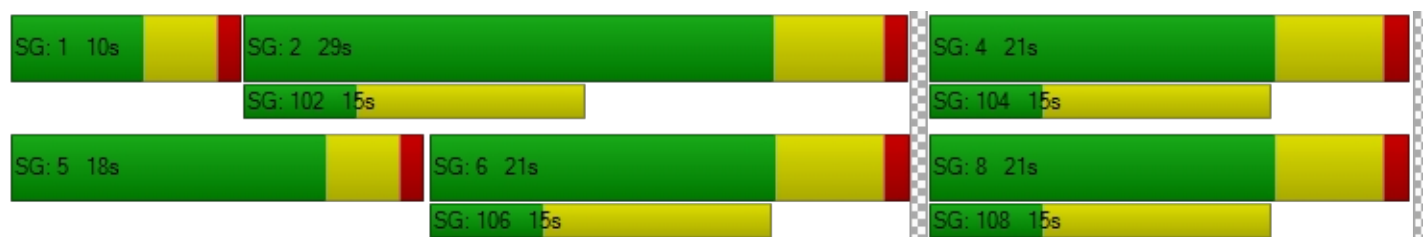
X, volume / capacity	0.67	0.45	0.45	0.48	0.49	0.08	0.52	0.39	0.40	0.22	0.52	0.53
d, Delay for Lane Group [s/veh]	29.34	11.76	12.82	26.09	12.31	9.48	27.07	16.53	16.66	21.09	17.61	17.90
Lane Group LOS	C	B	B	C	B	A	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	1.70	2.26	2.50	0.97	2.35	0.32	1.73	1.77	1.67	0.69	2.45	2.22
50th-Percentile Queue Length [ft]	42.59	56.45	62.59	24.26	58.77	8.06	43.21	44.31	41.68	17.20	61.21	55.61
95th-Percentile Queue Length [veh]	3.07	4.06	4.51	1.75	4.23	0.58	3.11	3.19	3.00	1.24	4.41	4.00
95th-Percentile Queue Length [ft]	76.66	101.62	112.66	43.67	105.78	14.50	77.78	79.76	75.03	30.96	110.17	100.10

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.34	12.08	12.82	26.09	12.31	9.48	27.07	16.57	16.66	21.09	17.65	17.90
Movement LOS	C	B	B	C	B	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	14.17			14.10			19.32			18.14		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	15.61											
Intersection LOS	B											
Intersection V/C	0.477											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	19.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.400

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	51	423	11	94	380	92	153	207	44	9	181	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	423	11	94	380	92	153	207	44	9	181	168
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	106	3	24	95	23	38	52	11	2	45	42
Total Analysis Volume [veh/h]	51	423	11	94	380	92	153	207	44	9	181	168
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	17	28	0	11	22	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	5	34	34	6	35	35	9	19	19	24	13	13
g / C, Green / Cycle	0.08	0.48	0.48	0.09	0.50	0.50	0.13	0.27	0.27	0.34	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.03	0.13	0.13	0.06	0.14	0.14	0.10	0.08	0.08	0.01	0.11	0.12
s, saturation flow rate [veh/h]	1597	1676	1728	1597	1676	1630	1597	1676	1577	1111	1676	1425
c, Capacity [veh/h]	123	802	827	150	830	807	205	452	425	444	311	264
d1, Uniform Delay [s]	30.80	10.92	10.92	30.55	10.40	10.42	29.40	20.20	20.24	17.97	26.05	26.34
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.23	0.81	0.79	4.29	0.87	0.91	5.30	0.34	0.37	0.02	1.73	2.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

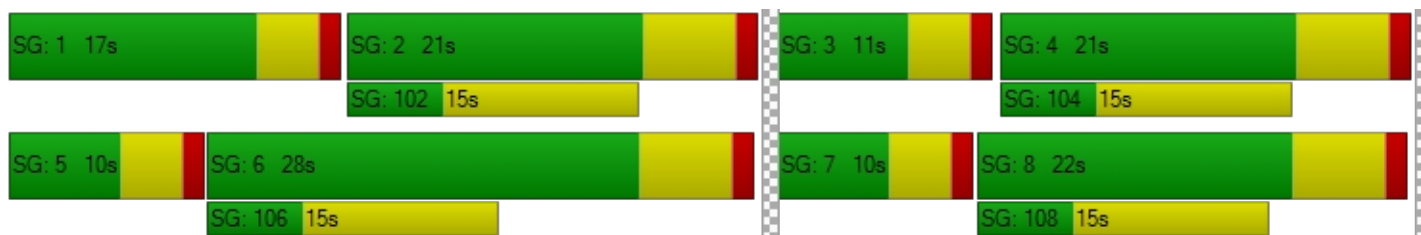
X, volume / capacity	0.42	0.27	0.27	0.63	0.29	0.29	0.75	0.28	0.29	0.02	0.58	0.64
d, Delay for Lane Group [s/veh]	33.03	11.73	11.71	34.84	11.27	11.33	34.69	20.54	20.61	17.99	27.78	28.88
Lane Group LOS	C	B	B	C	B	B	C	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.83	1.79	1.84	1.58	1.93	1.91	2.60	1.55	1.49	0.10	2.69	2.57
50th-Percentile Queue Length [ft]	20.85	44.63	45.98	39.60	48.29	47.75	65.12	38.69	37.29	2.43	67.20	64.23
95th-Percentile Queue Length [veh]	1.50	3.21	3.31	2.85	3.48	3.44	4.69	2.79	2.68	0.18	4.84	4.62
95th-Percentile Queue Length [ft]	37.53	80.33	82.77	71.28	86.92	85.94	117.21	69.65	67.12	4.38	120.97	115.61

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.03	11.72	11.71	34.84	11.30	11.33	34.69	20.57	20.61	17.99	27.78	28.88
Movement LOS	C	B	B	C	B	B	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	13.96			15.21			25.92			28.05		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.80											
Intersection LOS	B											
Intersection V/C	0.400											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	7.3
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.331

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑↑↑			↵ ↑↑↑			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	73	1127	11	49	434	11	19	2	13	22	8	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	1127	11	49	434	11	19	2	13	22	8	87
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	282	3	12	109	3	5	1	3	6	2	22
Total Analysis Volume [veh/h]	73	1127	11	49	434	11	19	2	13	22	8	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	10	21	0	0	29	0	0	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	42	42	5	42	42	7	7	7	7
g / C, Green / Cycle	0.10	0.71	0.71	0.08	0.70	0.70	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.23	0.23	0.03	0.09	0.09	0.02	0.01	0.02	0.07
s, saturation flow rate [veh/h]	1597	3192	1668	1597	3192	1655	1166	1512	1253	1443
c, Capacity [veh/h]	153	2252	1177	133	2214	1148	168	168	236	160
d1, Uniform Delay [s]	25.71	3.39	3.39	25.99	3.10	3.10	28.02	23.96	25.16	25.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.31	0.40	0.76	1.68	0.12	0.24	0.29	0.23	0.17	3.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

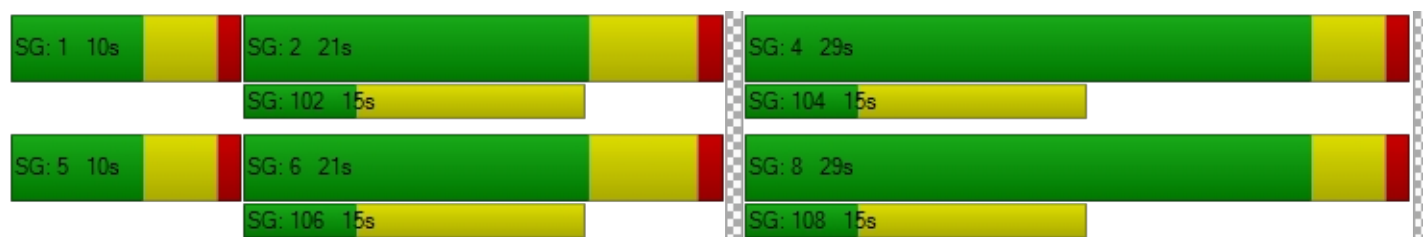
X, volume / capacity	0.48	0.33	0.33	0.37	0.13	0.13	0.11	0.09	0.09	0.59
d, Delay for Lane Group [s/veh]	28.03	3.79	4.15	27.68	3.22	3.34	28.32	24.19	25.33	28.88
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.00	0.88	1.03	0.67	0.32	0.37	0.26	0.18	0.28	1.33
50th-Percentile Queue Length [ft]	24.90	21.92	25.87	16.65	7.97	9.24	6.46	4.62	6.89	33.13
95th-Percentile Queue Length [veh]	1.79	1.58	1.86	1.20	0.57	0.67	0.46	0.33	0.50	2.39
95th-Percentile Queue Length [ft]	44.82	39.46	46.57	29.96	14.35	16.63	11.62	8.32	12.40	59.63

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.03	3.91	4.15	27.68	3.26	3.34	28.32	24.19	24.19	25.33	28.88	28.88
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	5.37			5.69			26.49			28.21		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.28											
Intersection LOS	A											
Intersection V/C	0.331											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.518

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	52	667	145	140	766	114	110	287	41	139	462	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	667	145	140	766	114	110	287	41	139	462	89
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	167	36	35	192	29	28	72	10	35	116	22
Total Analysis Volume [veh/h]	52	667	145	140	766	114	110	287	41	139	462	89
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	13	24	15	15	23	0	13	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	29	29	8	32	41	7	16	8	18	18
g / C, Green / Cycle	0.08	0.42	0.42	0.12	0.46	0.59	0.10	0.24	0.12	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.03	0.19	0.09	0.08	0.22	0.07	0.06	0.17	0.08	0.15	0.15
s, saturation flow rate [veh/h]	1774	3547	1583	1774	3547	1583	1774	1895	1774	1863	1832
c, Capacity [veh/h]	138	1476	659	208	1615	877	180	447	207	467	459
d1, Uniform Delay [s]	30.65	14.70	13.13	29.61	13.25	7.50	30.11	24.72	29.64	23.09	23.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.68	1.00	0.77	3.76	1.00	0.07	3.30	2.35	3.76	1.21	1.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

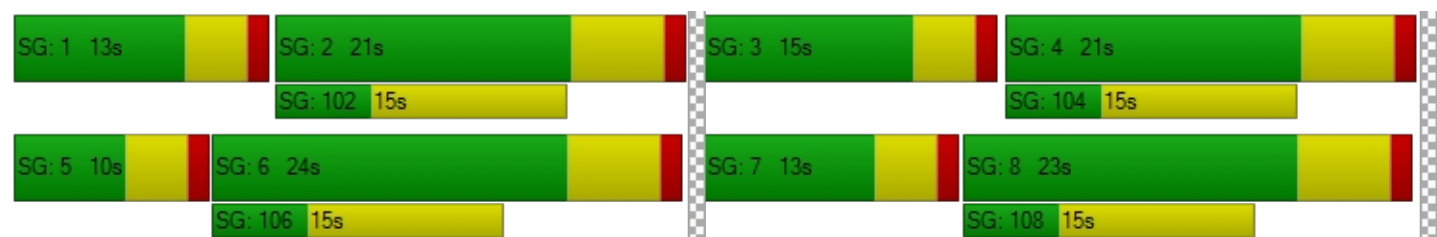
X, volume / capacity	0.38	0.45	0.22	0.67	0.47	0.13	0.61	0.73	0.67	0.59	0.60
d, Delay for Lane Group [s/veh]	32.33	15.70	13.90	33.38	14.25	7.56	33.41	27.07	33.39	24.30	24.35
Lane Group LOS	C	B	B	C	B	A	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.85	3.49	1.42	2.32	3.76	0.67	1.82	4.86	2.30	3.81	3.77
50th-Percentile Queue Length [ft]	21.17	87.19	35.41	58.01	93.88	16.76	45.62	121.61	57.61	95.31	94.34
95th-Percentile Queue Length [veh]	1.52	6.28	2.55	4.18	6.76	1.21	3.28	8.48	4.15	6.86	6.79
95th-Percentile Queue Length [ft]	38.10	156.94	63.73	104.42	168.99	30.16	82.11	212.04	103.70	171.55	169.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.33	15.70	13.90	33.38	14.25	7.56	33.41	27.07	27.07	33.39	24.32	24.35
Movement LOS	C	B	B	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.40			16.13			28.66			26.15		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.32											
Intersection LOS	C											
Intersection V/C	0.518											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	21.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.194

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵↻			↵			↵↻		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	37	208	0	0	214	156	106	0	18	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	208	0	0	214	156	106	0	18	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	52	0	0	54	39	27	0	5	0	0	0
Total Analysis Volume [veh/h]	37	208	0	0	214	156	106	0	18	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	21	0	18	29	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	15	15	15	15	15	6	37	2	33	33
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.24	0.11	0.62	0.04	0.55	0.55
(v / s)_j Volume / Saturation Flow Rate	0.04	0.12	0.00	0.13	0.11	0.07	0.01	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1046	1676	1052	1676	1425	1597	1425	1597	1676	1676
c, Capacity [veh/h]	239	410	243	410	348	169	882	59	921	921
d1, Uniform Delay [s]	24.45	19.56	0.00	19.64	19.23	25.68	4.42	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	0.97	0.00	1.03	0.90	3.76	0.04	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.16	0.51	0.00	0.52	0.45	0.63	0.02	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	24.75	20.53	0.00	20.67	20.14	29.44	4.46	0.00	0.00	0.00
Lane Group LOS	C	C	A	C	C	C	A	A	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	0.46	2.31	0.00	2.39	1.71	1.49	0.07	0.00	0.00	0.00
50th-Percentile Queue Length [ft]	11.47	57.72	0.00	59.71	42.72	37.24	1.63	0.00	0.00	0.00
95th-Percentile Queue Length [veh]	0.83	4.16	0.00	4.30	3.08	2.68	0.12	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	20.64	103.90	0.00	107.47	76.90	67.04	2.94	0.00	0.00	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.75	20.53	20.53	0.00	20.67	20.14	29.44	4.46	4.46	0.00	0.00	0.00
Movement LOS	C	C	C	A	C	C	C	A	A	A	A	A
d_A, Approach Delay [s/veh]	21.17			20.44			25.81			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	21.58											
Intersection LOS	C											
Intersection V/C	0.194											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	11.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.331

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↑			↵ ↑ ↑			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	920.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	793	58	78	245	0	0	0	0	57	0	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	793	58	78	245	0	0	0	0	57	0	149
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	198	15	20	61	0	0	0	0	14	0	37
Total Analysis Volume [veh/h]	0	793	58	78	245	0	0	0	0	57	0	149
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	11	23	0	10	21	0	16	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	42	42	7	46	46	2	8	8	6	12	12
g / C, Green / Cycle	0.04	0.60	0.60	0.09	0.65	0.65	0.03	0.12	0.12	0.08	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.00	0.18	0.18	0.05	0.05	0.05	0.00	0.00	0.00	0.04	0.00	0.10
s, saturation flow rate [veh/h]	1597	3192	1619	1597	3192	1676	1597	1676	1744	1597	1676	1425
c, Capacity [veh/h]	60	1901	964	149	2078	1091	51	196	204	128	277	235
d1, Uniform Delay [s]	0.00	6.96	6.96	30.26	4.49	4.49	0.00	0.00	0.00	30.71	24.40	27.25
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.40	0.79	2.84	0.07	0.14	0.00	0.00	0.00	2.41	0.00	2.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

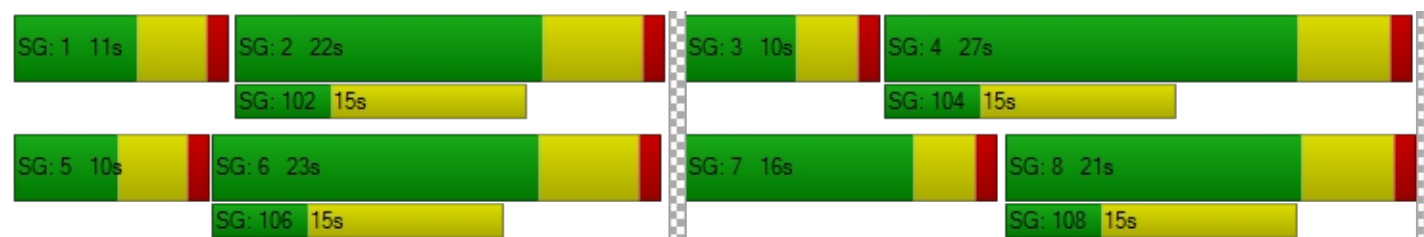
X, volume / capacity	0.00	0.30	0.30	0.52	0.08	0.08	0.00	0.00	0.00	0.45	0.00	0.63
d, Delay for Lane Group [s/veh]	0.00	7.35	7.76	33.10	4.56	4.63	0.00	0.00	0.00	33.12	24.40	30.07
Lane Group LOS	A	A	A	C	A	A	A	A	A	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.00	1.65	1.79	1.29	0.31	0.35	0.00	0.00	0.00	0.95	0.00	2.33
50th-Percentile Queue Length [ft]	0.00	41.23	44.73	32.25	7.78	8.67	0.00	0.00	0.00	23.66	0.00	58.28
95th-Percentile Queue Length [veh]	0.00	2.97	3.22	2.32	0.56	0.62	0.00	0.00	0.00	1.70	0.00	4.20
95th-Percentile Queue Length [ft]	0.00	74.21	80.52	58.05	14.00	15.60	0.00	0.00	0.00	42.58	0.00	104.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	7.47	7.76	33.10	4.59	4.63	0.00	0.00	0.00	33.12	24.40	30.07
Movement LOS	A	A	A	C	A	A	A	A	A	C	C	C
d_A, Approach Delay [s/veh]	7.49			11.47			0.00			30.91		
Approach LOS	A			B			A			C		
d_I, Intersection Delay [s/veh]	11.92											
Intersection LOS	B											
Intersection V/C	0.331											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	12.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.457

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	783	108	29	852	64	82	127	48	71	136	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	783	108	29	852	64	82	127	48	71	136	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	196	27	7	213	16	21	32	12	18	34	7
Total Analysis Volume [veh/h]	48	783	108	29	852	64	82	127	48	71	136	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	18	29	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	32	32	4	31	31	18	18	18	18
g / C, Green / Cycle	0.08	0.53	0.53	0.07	0.52	0.52	0.30	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.03	0.25	0.08	0.02	0.27	0.04	0.07	0.08	0.03	0.16
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1097	1676	1425	1458
c, Capacity [veh/h]	132	1701	759	111	1658	740	278	499	424	512
d1, Uniform Delay [s]	26.02	8.67	7.08	26.46	9.45	7.25	23.76	16.01	15.31	17.41
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.67	0.90	0.39	1.24	1.14	0.23	0.58	0.27	0.12	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.36	0.46	0.14	0.26	0.51	0.09	0.30	0.25	0.11	0.45
d, Delay for Lane Group [s/veh]	27.69	9.57	7.47	27.70	10.59	7.48	24.35	16.27	15.43	18.05
Lane Group LOS	C	A	A	C	B	A	C	B	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.65	2.53	0.60	0.40	2.99	0.36	1.01	1.18	0.43	2.39
50th-Percentile Queue Length [ft]	16.32	63.22	15.11	9.95	74.74	9.04	25.29	29.58	10.70	59.75
95th-Percentile Queue Length [veh]	1.17	4.55	1.09	0.72	5.38	0.65	1.82	2.13	0.77	4.30
95th-Percentile Queue Length [ft]	29.37	113.79	27.21	17.91	134.54	16.28	45.52	53.24	19.27	107.55

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.69	9.57	7.47	27.70	10.59	7.48	24.35	16.27	15.43	18.05	18.05	18.05
Movement LOS	C	A	A	C	B	A	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	10.26			10.90			18.69			18.05		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	12.19											
Intersection LOS	B											
Intersection V/C	0.457											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type:	All-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.399

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	243	5	28	215	24	56	50	20	7	48	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	243	5	28	215	24	56	50	20	7	48	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	61	1	7	54	6	14	13	5	2	12	4
Total Analysis Volume [veh/h]	48	243	5	28	215	24	56	50	20	7	48	14
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	743	745	665	663
Degree of Utilization, x	0.40	0.36	0.19	0.10

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	1.92	1.63	0.69	0.35
95th-Percentile Queue Length [ft]	48.04	40.75	17.36	8.67
Approach Delay [s/veh]	11.02	10.50	9.68	9.06
Approach LOS	B	B	A	A
Intersection Delay [s/veh]	10.44			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	8.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.282

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	220.00	100.00	970.00	200.00	100.00	100.00	30.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	1	950	16	30	401	3	10	3	0	37	4	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	950	16	30	401	3	10	3	0	37	4	83
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	238	4	8	100	1	3	1	0	9	1	21
Total Analysis Volume [veh/h]	1	950	16	30	401	3	10	3	0	37	4	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	25	0	10	25	0	14	11	0	24	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	46	46	5	48	48	3	6	5	8	8
g / C, Green / Cycle	0.04	0.66	0.66	0.07	0.69	0.69	0.04	0.09	0.07	0.11	0.11
(v / s)_j Volume / Saturation Flow Rate	0.00	0.20	0.20	0.02	0.12	0.12	0.01	0.00	0.02	0.00	0.06
s, saturation flow rate [veh/h]	1597	3192	1662	1597	1676	1672	1597	1744	1597	1676	1425
c, Capacity [veh/h]	62	2100	1093	110	1153	1150	72	155	112	191	162
d1, Uniform Delay [s]	32.34	5.12	5.12	30.91	3.88	3.88	32.12	29.11	30.99	27.55	29.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	0.37	0.71	1.31	0.33	0.33	0.87	0.05	1.71	0.04	2.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.02	0.30	0.30	0.27	0.18	0.18	0.14	0.02	0.33	0.02	0.51
d, Delay for Lane Group [s/veh]	32.44	5.49	5.83	32.23	4.21	4.21	32.99	29.16	32.70	27.60	31.67
Lane Group LOS	C	A	A	C	A	A	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.02	1.41	1.58	0.49	0.73	0.73	0.17	0.05	0.61	0.06	1.34
50th-Percentile Queue Length [ft]	0.43	35.31	39.42	12.29	18.21	18.19	4.27	1.13	15.31	1.45	33.44
95th-Percentile Queue Length [veh]	0.03	2.54	2.84	0.89	1.31	1.31	0.31	0.08	1.10	0.10	2.41
95th-Percentile Queue Length [ft]	0.77	63.57	70.95	22.13	32.78	32.73	7.68	2.04	27.56	2.61	60.19

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.44	5.60	5.83	32.23	4.21	4.21	32.99	29.16	29.16	32.70	27.60	31.67
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	5.63			6.15			32.11			31.85		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.12											
Intersection LOS	A											
Intersection V/C	0.282											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	16.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.511

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	185.00	100.00	50.00	165.00	100.00	165.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	98	775	10	13	831	144	155	52	66	30	145	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	98	775	10	13	831	144	155	52	66	30	145	8
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	194	3	3	208	36	39	13	17	8	36	2
Total Analysis Volume [veh/h]	98	775	10	13	831	144	155	52	66	30	145	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	27	0	10	21	0	12	23	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	39	39	3	35	35	9	16	16	4	11
g / C, Green / Cycle	0.10	0.55	0.55	0.05	0.50	0.50	0.13	0.22	0.22	0.06	0.15
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.01	0.01	0.26	0.10	0.10	0.03	0.04	0.02	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1482	1597	1661
c, Capacity [veh/h]	154	1757	785	77	1605	716	214	374	330	102	254
d1, Uniform Delay [s]	30.46	9.34	7.12	31.95	11.70	9.63	29.09	21.81	22.12	31.26	27.66
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.35	0.81	0.03	1.01	1.20	0.63	4.64	0.17	0.29	1.59	2.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

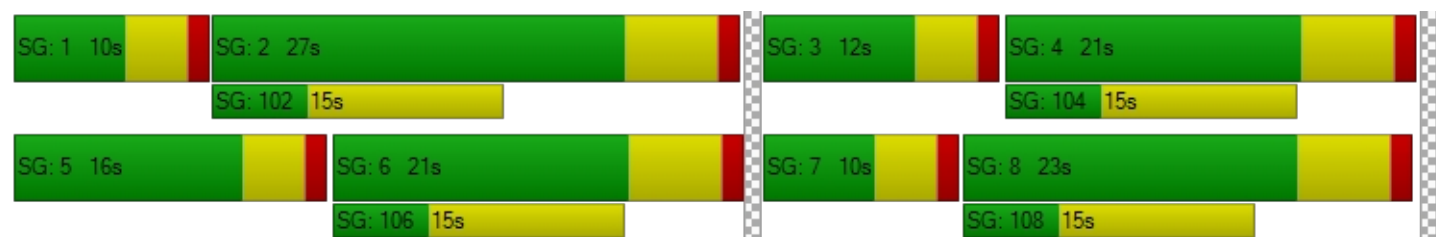
X, volume / capacity	0.64	0.44	0.01	0.17	0.52	0.20	0.73	0.14	0.20	0.29	0.60
d, Delay for Lane Group [s/veh]	34.81	10.14	7.15	32.97	12.90	10.26	33.73	21.98	22.41	32.85	29.94
Lane Group LOS	C	B	A	C	B	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.67	2.95	0.06	0.22	3.81	1.14	2.59	0.65	0.84	0.50	2.38
50th-Percentile Queue Length [ft]	41.83	73.75	1.52	5.52	95.24	28.39	64.85	16.23	21.01	12.49	59.41
95th-Percentile Queue Length [veh]	3.01	5.31	0.11	0.40	6.86	2.04	4.67	1.17	1.51	0.90	4.28
95th-Percentile Queue Length [ft]	75.30	132.75	2.73	9.93	171.43	51.11	116.73	29.22	37.82	22.48	106.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.81	10.14	7.15	32.97	12.90	10.26	33.73	21.98	22.41	32.85	29.94	29.94
Movement LOS	C	B	A	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	12.85			12.78			28.75			30.42		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	16.06											
Intersection LOS	B											
Intersection V/C	0.511											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	All-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.392

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	65	219	6	21	175	44	34	14	16	7	42	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	219	6	21	175	44	34	14	16	7	42	22
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	55	2	5	44	11	9	4	4	2	11	6
Total Analysis Volume [veh/h]	65	219	6	21	175	44	34	14	16	7	42	22
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	740	749	650	666
Degree of Utilization, x	0.39	0.32	0.10	0.11

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	1.87	1.39	0.33	0.36
95th-Percentile Queue Length [ft]	46.82	34.63	8.15	8.89
Approach Delay [s/veh]	10.97	10.06	9.14	9.04
Approach LOS	B	B	A	A
Intersection Delay [s/veh]	10.26			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.549

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	524	1	323	0	660	194	44	1188	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	524	1	323	0	660	194	44	1188	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	131	0	81	0	165	49	11	297	0	0	0	0
Total Analysis Volume [veh/h]	524	1	323	0	660	194	44	1188	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	0	20	0	19	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	30	30	5	37
g / C, Green / Cycle	0.31	0.31	0.31	0.51	0.51	0.08	0.62
(v / s)_i Volume / Saturation Flow Rate	0.19	0.19	0.26	0.20	0.21	0.02	0.29
s, saturation flow rate [veh/h]	1416	1416	1264	2831	1327	2750	4050
c, Capacity [veh/h]	442	442	394	1429	670	229	2517
d1, Uniform Delay [s]	17.43	17.43	19.07	9.21	9.36	25.63	6.09
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.28	1.28	4.24	0.83	1.97	0.40	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

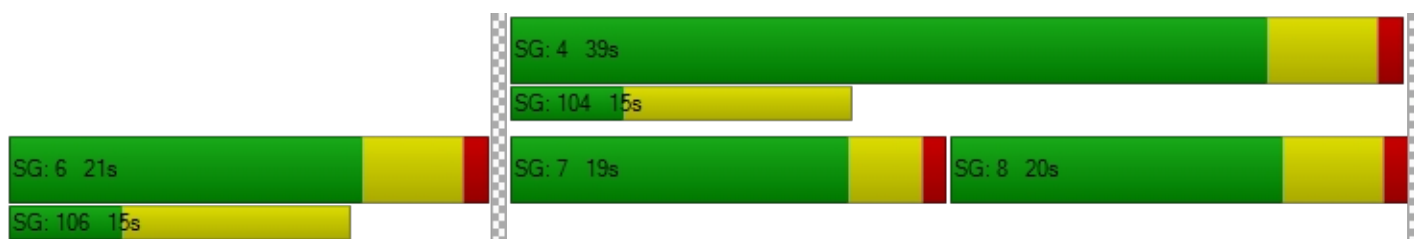
X, volume / capacity	0.59	0.59	0.82	0.40	0.42	0.19	0.47
d, Delay for Lane Group [s/veh]	18.71	18.71	23.32	10.04	11.33	26.03	6.73
Lane Group LOS	B	B	C	B	B	C	A
Critical Lane Group	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.78	2.78	3.99	1.91	2.14	0.28	1.81
50th-Percentile Queue Length [ft]	69.41	69.41	99.79	47.67	53.45	7.01	45.37
95th-Percentile Queue Length [veh]	5.00	5.00	7.19	3.43	3.85	0.50	3.27
95th-Percentile Queue Length [ft]	124.93	124.93	179.63	85.81	96.21	12.62	81.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	18.71	18.71	23.32	0.00	10.22	11.33	26.03	6.73	0.00	0.00	0.00	0.00
Movement LOS	B	B	C		B	B	C	A				
d_A, Approach Delay [s/veh]	20.46			10.47			7.41			0.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	12.08											
Intersection LOS	B											
Intersection V/C	0.549											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	42.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave			Grand Ave		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave			Grand Ave		
Base Volume Input [veh/h]	417	68	48	29	0	441	196	815	177	0	914	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	417	68	48	29	0	441	196	815	177	0	914	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	104	17	12	7	0	110	49	204	44	0	229	5
Total Analysis Volume [veh/h]	417	68	48	29	0	441	196	815	177	0	914	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Permiss	Split	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	33	0	0	15	36	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No			No	No			No	
Maximum Recall		No		No			No	No			No	
Pedestrian Recall		No		No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	31	31	13	34	19	19
g / C, Green / Cycle	0.21	0.21	0.21	0.34	0.34	0.14	0.38	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.17	0.17	0.04	0.02	0.35	0.14	0.20	0.17	0.16
s, saturation flow rate [veh/h]	1416	1435	1264	1416	1264	1416	4050	4050	1465
c, Capacity [veh/h]	299	303	266	488	435	205	1531	855	309
d1, Uniform Delay [s]	33.77	33.77	29.13	19.74	29.50	38.22	21.80	33.85	33.31
k, delay calibration	0.11	0.11	0.11	0.11	0.49	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.14	5.07	0.32	0.05	45.71	20.60	1.33	8.60	15.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.81	0.18	0.06	1.01	0.96	0.53	0.82	0.75
d, Delay for Lane Group [s/veh]	38.91	38.84	29.45	19.79	75.20	58.82	23.13	42.46	48.99
Lane Group LOS	D	D	C	B	F	E	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	5.18	5.25	0.84	0.39	14.20	5.28	4.34	5.31	5.90
50th-Percentile Queue Length [ft]	129.61	131.20	21.04	9.83	354.92	131.92	108.57	132.69	147.47
95th-Percentile Queue Length [veh]	8.92	9.00	1.51	0.71	20.55	9.04	7.76	9.09	9.88
95th-Percentile Queue Length [ft]	222.97	225.12	37.87	17.69	513.63	226.11	194.01	227.14	247.05

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	38.88	38.84	29.45	19.79	0.00	75.20	58.82	23.13	0.00	0.00	43.98	48.99
Movement LOS	D	D	C	B		F	E	C			D	D
d_A, Approach Delay [s/veh]	38.03			71.78			30.05			44.09		
Approach LOS	D			E			C			D		
d_I, Intersection Delay [s/veh]	42.59											
Intersection LOS	D											
Intersection V/C	0.830											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	52	341	47	43	395	81	72	582	72	35	736	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	341	47	43	395	81	72	582	72	35	736	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	85	12	11	99	20	18	146	18	9	184	9
Total Analysis Volume [veh/h]	52	341	47	43	395	81	72	582	72	35	736	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	18	29	10	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	17	17	5	16	16	6	36	43	5	34	34
g / C, Green / Cycle	0.08	0.24	0.24	0.07	0.23	0.23	0.09	0.51	0.62	0.07	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.04	0.12	0.04	0.03	0.16	0.17	0.05	0.21	0.03	0.02	0.26	0.26
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1401	1416	2831	2237	1416	1487	1463
c, Capacity [veh/h]	109	668	298	102	344	324	122	1445	1308	95	730	719
d1, Uniform Delay [s]	30.94	23.22	21.22	31.07	24.75	24.81	30.78	10.56	6.24	31.24	12.27	12.27
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	0.60	0.24	2.73	2.70	2.99	4.44	0.84	0.02	2.37	2.77	2.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

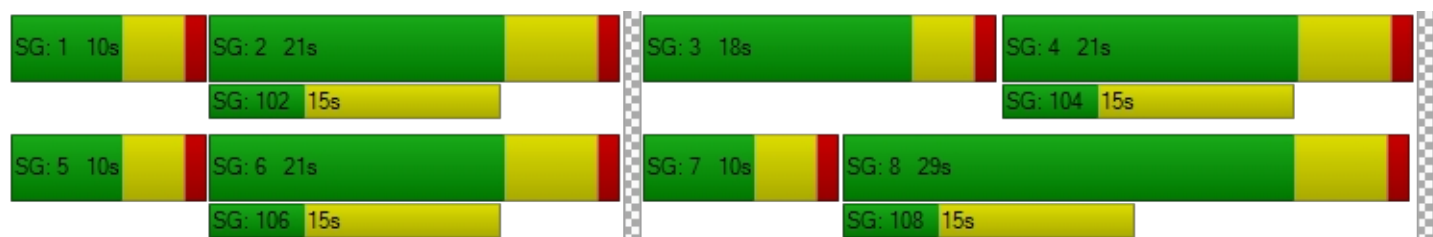
X, volume / capacity	0.48	0.51	0.16	0.42	0.71	0.72	0.59	0.40	0.06	0.37	0.53	0.53
d, Delay for Lane Group [s/veh]	34.13	23.83	21.46	33.80	27.44	27.79	35.23	11.40	6.26	33.61	15.04	15.09
Lane Group LOS	C	C	C	C	C	C	D	B	A	C	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.89	2.29	0.58	0.73	3.64	3.50	1.25	2.43	0.18	0.59	4.00	3.95
50th-Percentile Queue Length [ft]	22.14	57.22	14.56	18.24	91.02	87.61	31.16	60.76	4.48	14.85	100.07	98.76
95th-Percentile Queue Length [veh]	1.59	4.12	1.05	1.31	6.55	6.31	2.24	4.37	0.32	1.07	7.20	7.11
95th-Percentile Queue Length [ft]	39.84	102.99	26.21	32.84	163.83	157.70	56.08	109.37	8.07	26.72	180.12	177.78

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.13	23.83	21.46	33.80	27.58	27.79	35.23	11.40	6.26	33.61	15.06	15.09
Movement LOS	C	C	C	C	C	C	D	B	A	C	B	B
d_A, Approach Delay [s/veh]	24.79			28.13			13.25			15.87		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	19.24											
Intersection LOS	B											
Intersection V/C	0.515											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	62	635	227	26	707	302	114	316	32	162	603	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	635	227	26	707	302	114	316	32	162	603	53
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	159	57	7	177	76	29	79	8	41	151	13
Total Analysis Volume [veh/h]	62	635	227	26	707	302	114	316	32	162	603	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	10	22	0	17	22	0	16	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	23	23	4	21	21	8	28	28	7	27	27
g / C, Green / Cycle	0.08	0.33	0.33	0.06	0.31	0.31	0.12	0.39	0.39	0.10	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.18	0.02	0.25	0.24	0.08	0.12	0.12	0.06	0.21	0.04
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1440	2750	2831	1264
c, Capacity [veh/h]	117	923	412	87	864	386	165	585	567	287	1080	482
d1, Uniform Delay [s]	30.81	20.49	19.37	31.41	22.53	22.21	29.70	14.60	14.62	29.82	17.02	13.98
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.13	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.70	0.92	1.15	1.89	1.98	4.07	5.04	1.32	1.38	1.73	2.09	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

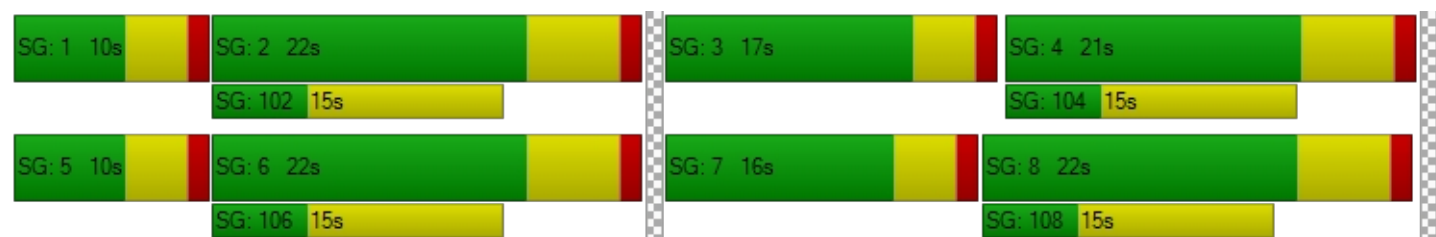
X, volume / capacity	0.53	0.69	0.55	0.30	0.82	0.78	0.69	0.30	0.30	0.56	0.56	0.11
d, Delay for Lane Group [s/veh]	34.51	21.41	20.52	33.30	24.51	26.28	34.74	15.92	15.99	31.56	19.11	14.44
Lane Group LOS	C	C	C	C	C	C	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.06	4.11	2.83	0.44	5.02	4.47	1.95	1.90	1.86	1.28	3.64	0.54
50th-Percentile Queue Length [ft]	26.53	102.64	70.68	11.03	125.59	111.67	48.74	47.46	46.60	32.07	90.91	13.54
95th-Percentile Queue Length [veh]	1.91	7.39	5.09	0.79	8.70	7.93	3.51	3.42	3.36	2.31	6.55	0.97
95th-Percentile Queue Length [ft]	47.75	184.76	127.23	19.85	217.48	198.32	87.74	85.43	83.88	57.72	163.65	24.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.51	21.41	20.52	33.30	24.51	26.28	34.74	15.95	15.99	31.56	19.11	14.44
Movement LOS	C	C	C	C	C	C	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	22.07			25.24			20.59			21.27		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	22.67											
Intersection LOS	C											
Intersection V/C	0.587											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	16.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.394

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	180.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	24	131	60	57	73	77	73	294	22	47	605	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	131	60	57	73	77	73	294	22	47	605	81
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	33	15	14	18	19	18	74	6	12	151	20
Total Analysis Volume [veh/h]	24	131	60	57	73	77	73	294	22	47	605	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	13	29	0	10	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	11	11	6	12	12	6	41	41	5	40	40
g / C, Green / Cycle	0.06	0.15	0.15	0.08	0.17	0.17	0.09	0.58	0.58	0.07	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.05	0.04	0.05	0.06	0.05	0.07	0.07	0.03	0.21	0.06
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1435	1416	2831	1264
c, Capacity [veh/h]	83	228	194	113	259	220	123	1636	829	106	1602	715
d1, Uniform Delay [s]	31.53	27.52	26.34	30.88	25.10	25.42	30.78	6.74	6.75	30.99	8.39	7.05
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.87	2.28	0.90	3.45	0.59	0.95	4.53	0.16	0.32	2.89	0.68	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

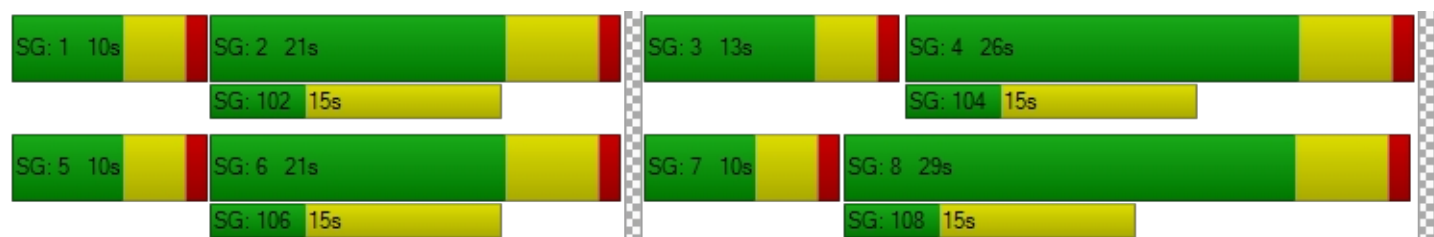
X, volume / capacity	0.29	0.57	0.31	0.50	0.28	0.35	0.59	0.13	0.13	0.44	0.38	0.11
d, Delay for Lane Group [s/veh]	33.40	29.79	27.24	34.32	25.69	26.36	35.31	6.90	7.07	33.88	9.07	7.37
Lane Group LOS	C	C	C	C	C	C	D	A	A	C	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.41	2.03	0.88	0.97	1.02	1.10	1.27	0.58	0.64	0.80	2.10	0.50
50th-Percentile Queue Length [ft]	10.22	50.79	21.90	24.32	25.48	27.54	31.63	14.55	15.97	19.94	52.61	12.58
95th-Percentile Queue Length [veh]	0.74	3.66	1.58	1.75	1.83	1.98	2.28	1.05	1.15	1.44	3.79	0.91
95th-Percentile Queue Length [ft]	18.40	91.41	39.41	43.78	45.87	49.57	56.94	26.19	28.75	35.89	94.69	22.64

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.40	29.79	27.24	34.32	25.69	26.36	35.31	6.95	7.07	33.88	9.07	7.37
Movement LOS	C	C	C	C	C	C	D	A	A	C	A	A
d_A, Approach Delay [s/veh]	29.48			28.32			12.28			10.47		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.97											
Intersection LOS	B											
Intersection V/C	0.394											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.541

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	145	763	32	24	702	169	89	165	94	46	335	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	763	32	24	702	169	89	165	94	46	335	44
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	191	8	6	176	42	22	41	24	12	84	11
Total Analysis Volume [veh/h]	145	763	32	24	702	169	89	165	94	46	335	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	17	25	0	13	21	0	0	22	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	30	30	4	26	26	20	20	20	20	20
g / C, Green / Cycle	0.13	0.50	0.50	0.07	0.43	0.43	0.33	0.33	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.09	0.24	0.02	0.02	0.22	0.12	0.10	0.10	0.07	0.04	0.23
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	900	1676	1425	1094	1643
c, Capacity [veh/h]	214	1598	713	105	1381	617	225	559	475	387	548
d1, Uniform Delay [s]	24.75	9.83	7.65	26.57	12.38	10.95	25.96	14.79	14.27	17.90	17.33
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.73	1.02	0.12	1.08	1.34	1.10	1.12	0.29	0.20	0.14	1.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

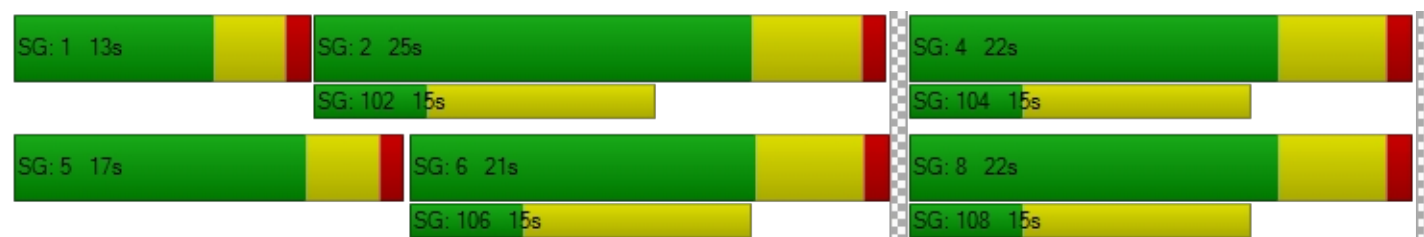
X, volume / capacity	0.68	0.48	0.04	0.23	0.51	0.27	0.40	0.30	0.20	0.12	0.69
d, Delay for Lane Group [s/veh]	28.48	10.85	7.77	27.65	13.72	12.05	27.08	15.08	14.48	18.04	18.91
Lane Group LOS	C	B	A	C	B	B	C	B	B	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.99	2.72	0.19	0.33	3.01	1.36	1.19	1.47	0.81	0.46	4.07
50th-Percentile Queue Length [ft]	49.82	67.96	4.65	8.25	75.13	33.98	29.85	36.70	20.22	11.49	101.74
95th-Percentile Queue Length [veh]	3.59	4.89	0.34	0.59	5.41	2.45	2.15	2.64	1.46	0.83	7.33
95th-Percentile Queue Length [ft]	89.67	122.34	8.38	14.85	135.23	61.17	53.74	66.05	36.40	20.67	183.14

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.48	10.85	7.77	27.65	13.72	12.05	27.08	15.08	14.48	18.04	18.91	18.91
Movement LOS	C	B	A	C	B	B	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	13.47			13.78			17.99			18.82		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	15.05											
Intersection LOS	B											
Intersection V/C	0.541											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	All-way stop	Delay (sec / veh):	18.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	21	166	22	35	115	22	32	163	9	47	389	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	166	22	35	115	22	32	163	9	47	389	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	42	6	9	29	6	8	41	2	12	97	18
Total Analysis Volume [veh/h]	21	166	22	35	115	22	32	163	9	47	389	71
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	565	555	587	651
Degree of Utilization, x	0.37	0.31	0.35	0.78

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	1.70	1.31	1.55	7.47
95th-Percentile Queue Length [ft]	42.45	32.73	38.72	186.73
Approach Delay [s/veh]	13.07	12.36	12.37	25.22
Approach LOS	B	B	B	D
Intersection Delay [s/veh]	18.47			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.470

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	2	0	2	2	0	0
Pocket Length [ft]	500.00	100.00	280.00	320.00	100.00	75.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	173	876	239	30	356	82	39	130	47	151	275	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	876	239	30	356	82	39	130	47	151	275	50
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	219	60	8	89	21	10	33	12	38	69	13
Total Analysis Volume [veh/h]	173	876	239	30	356	82	39	130	47	151	275	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	24	0	15	22	0	10	21	17	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	11	36	5	31	31	5	14	7	16	16
g / C, Green / Cycle	0.15	0.52	0.07	0.44	0.44	0.07	0.20	0.10	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.11	0.27	0.02	0.11	0.06	0.01	0.04	0.05	0.16	0.04
s, saturation flow rate [veh/h]	1597	3192	1597	3192	1425	3101	3192	3101	1676	1425
c, Capacity [veh/h]	244	1656	113	1394	622	217	629	308	379	323
d1, Uniform Delay [s]	28.18	11.17	30.82	12.50	11.79	30.65	23.52	29.85	25.06	21.71
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.79	1.21	1.25	0.44	0.44	0.39	0.16	1.21	2.64	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.71	0.53	0.27	0.26	0.13	0.18	0.21	0.49	0.72	0.16
d, Delay for Lane Group [s/veh]	31.97	12.39	32.06	12.95	12.23	31.04	23.68	31.06	27.70	21.93
Lane Group LOS	C	B	C	B	B	C	C	C	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.76	3.76	0.48	1.56	0.72	0.30	0.83	1.16	4.06	0.61
50th-Percentile Queue Length [ft]	69.07	94.01	12.08	39.09	17.94	7.47	20.77	28.97	101.38	15.37
95th-Percentile Queue Length [veh]	4.97	6.77	0.87	2.81	1.29	0.54	1.50	2.09	7.30	1.11
95th-Percentile Queue Length [ft]	124.32	169.21	21.74	70.35	32.29	13.44	37.38	52.15	182.48	27.66

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.97	12.39	0.00	32.06	12.95	12.23	31.04	23.68	0.00	31.06	27.70	21.93
Movement LOS	C	B		C	B	B	C	C		C	C	C
d_A, Approach Delay [s/veh]	15.62			14.05			25.38			28.16		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.80											
Intersection LOS	B											
Intersection V/C	0.470											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐			⇐⇐			⇐⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	106	428	253	95	173	24	24	261	60	133	398	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	428	253	95	173	24	24	261	60	133	398	174
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	107	63	24	43	6	6	65	15	33	100	44
Total Analysis Volume [veh/h]	106	428	253	95	173	24	24	261	60	133	398	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	21	0	28	21	0	10	17	0	14	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	38	7	37	4	18	18	9	23	23
g / C, Green / Cycle	0.10	0.47	0.09	0.46	0.05	0.22	0.22	0.12	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.07	0.43	0.06	0.12	0.02	0.16	0.04	0.08	0.24	0.12
s, saturation flow rate [veh/h]	1597	1573	1597	1641	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	159	744	147	763	86	367	312	186	472	401
d1, Uniform Delay [s]	34.71	19.59	35.07	13.01	36.37	28.91	25.48	34.08	27.08	23.53
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.18	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.69	17.81	4.72	0.82	1.75	2.56	0.30	5.09	6.80	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

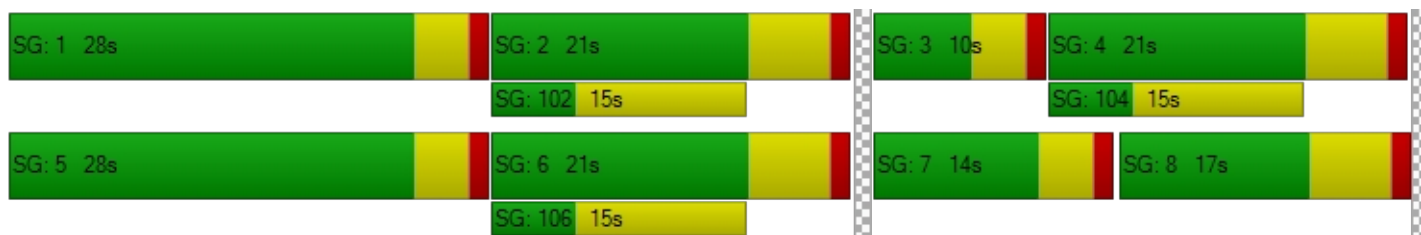
X, volume / capacity	0.66	0.92	0.65	0.26	0.28	0.71	0.19	0.72	0.84	0.43
d, Delay for Lane Group [s/veh]	39.40	37.41	39.78	13.83	38.12	31.47	25.78	39.17	33.89	24.27
Lane Group LOS	D	D	D	B	D	C	C	D	C	C
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.10	13.75	1.89	2.09	0.47	4.59	0.90	2.63	7.47	2.58
50th-Percentile Queue Length [ft]	52.53	343.64	47.37	52.25	11.82	114.71	22.56	65.69	186.76	64.52
95th-Percentile Queue Length [veh]	3.78	19.83	3.41	3.76	0.85	8.10	1.62	4.73	11.95	4.65
95th-Percentile Queue Length [ft]	94.56	495.65	85.27	94.04	21.28	202.53	40.61	118.25	298.82	116.14

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.40	37.41	37.41	39.78	13.83	13.83	38.12	31.47	25.78	39.17	33.89	24.27
Movement LOS	D	D	D	D	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	37.67			22.27			30.94			32.51		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	32.76											
Intersection LOS	C											
Intersection V/C	0.745											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	10.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.436

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵↵		↑↑↑		↑↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	263	470	0	425	338	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	263	470	0	425	338	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	118	0	106	85	0
Total Analysis Volume [veh/h]	263	470	0	425	338	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.4	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	49	0	0	66	11	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	0.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	24	24	0	32
g / C, Green / Cycle	0.40	0.40	0.00	0.53
(v / s)_i Volume / Saturation Flow Rate	0.16	0.33	0.09	0.11
s, saturation flow rate [veh/h]	1675	1425	4567	3192
c, Capacity [veh/h]	787	575	0	1691
d1, Uniform Delay [s]	12.88	15.93	0.00	7.42
k, delay calibration	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	2.93	0.00	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.33	0.82	0.00	0.20
d, Delay for Lane Group [s/veh]	13.13	18.85	0.00	7.68
Lane Group LOS	B	B	A	A
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	1.15	5.44	0.00	0.99
50th-Percentile Queue Length [ft]	28.64	135.90	0.00	24.83
95th-Percentile Queue Length [veh]	2.06	9.26	0.00	1.79
95th-Percentile Queue Length [ft]	51.55	231.49	0.00	44.69

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.13	18.85	0.00	0.00	7.68	0.00
Movement LOS	B	B		A	A	
d_A, Approach Delay [s/veh]	16.80		0.00		7.68	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	9.97					
Intersection LOS	A					
Intersection V/C	0.436					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	6.3
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.077

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	180	149	300	385	322	244
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	180	149	300	385	322	244
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	37	75	96	81	61
Total Analysis Volume [veh/h]	180	149	300	385	322	244
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	31	0	29	31	0	29
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	10	10	10	46	58	46	46
g / C, Green / Cycle	0.17	0.17	0.17	0.76	0.97	0.76	0.76
(v / s)_j Volume / Saturation Flow Rate	0.07	0.07	0.07	0.07	0.27	0.17	0.05
s, saturation flow rate [veh/h]	1597	1521	1425	4567	1425	1879	4567
c, Capacity [veh/h]	277	264	247	3470	1287	1457	3470
d1, Uniform Delay [s]	22.09	22.10	22.11	1.85	0.38	3.01	1.83
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.99	1.05	1.13	0.05	0.14	0.35	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

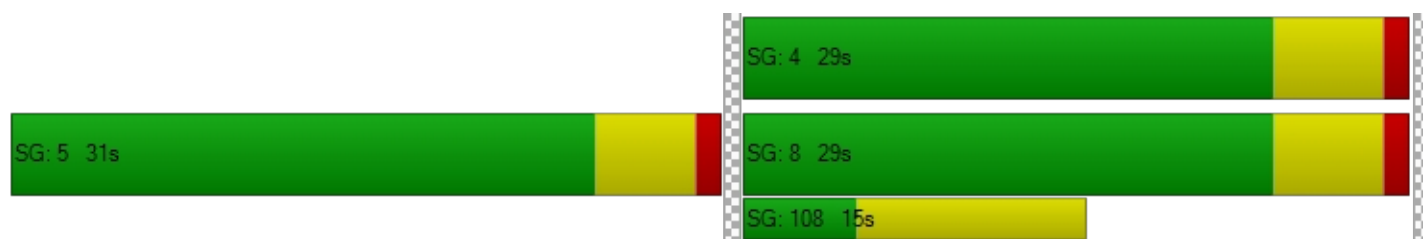
X, volume / capacity	0.42	0.42	0.42	0.09	0.30	0.22	0.07
d, Delay for Lane Group [s/veh]	23.08	23.15	23.24	1.90	0.52	3.36	1.87
Lane Group LOS	C	C	C	A	A	A	A
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.43	1.37	1.30	0.13	0.05	0.44	0.11
50th-Percentile Queue Length [ft]	35.76	34.34	32.51	3.31	1.21	10.99	2.66
95th-Percentile Queue Length [veh]	2.57	2.47	2.34	0.24	0.09	0.79	0.19
95th-Percentile Queue Length [ft]	64.36	61.82	58.51	5.96	2.17	19.78	4.78

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	23.11	23.22	1.90	0.52	3.36	1.87
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	23.15		1.12		2.72	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	6.28					
Intersection LOS	A					
Intersection V/C	0.077					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	9.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.434

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	75.00	140.00	100.00	70.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	156	877	3	8	803	35	56	12	125	5	48	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	156	877	3	8	803	35	56	12	125	5	48	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	219	1	2	201	9	14	3	31	1	12	3
Total Analysis Volume [veh/h]	156	877	3	8	803	35	56	12	125	5	48	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	29	0	10	21	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	41	41	3	35	35	10	10	10	10	10
g / C, Green / Cycle	0.14	0.68	0.68	0.05	0.59	0.59	0.17	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.10	0.27	0.00	0.01	0.25	0.02	0.05	0.01	0.08	0.00	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1206	1676	1482	1257	1627
c, Capacity [veh/h]	225	2178	972	75	1879	839	266	286	253	303	277
d1, Uniform Delay [s]	24.54	4.17	3.03	27.37	6.79	5.21	24.30	20.79	22.54	21.97	21.41
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.80	0.56	0.01	0.61	0.71	0.09	0.39	0.06	1.50	0.02	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

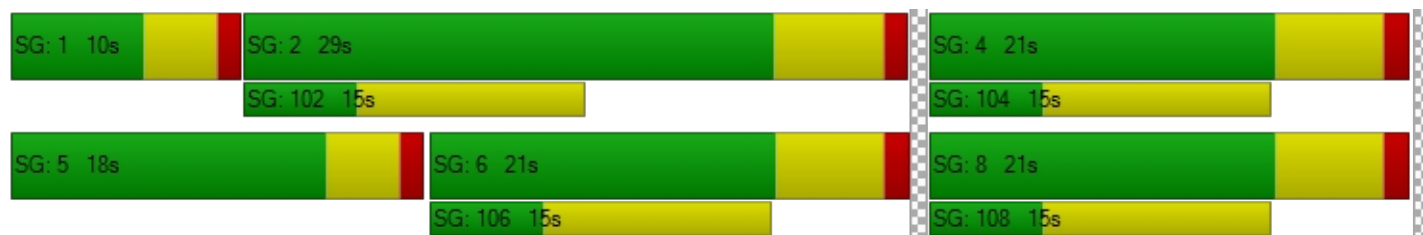
X, volume / capacity	0.69	0.40	0.00	0.11	0.43	0.04	0.21	0.04	0.49	0.02	0.21
d, Delay for Lane Group [s/veh]	28.33	4.73	3.04	27.99	7.50	5.30	24.69	20.85	24.04	21.99	21.78
Lane Group LOS	C	A	A	C	A	A	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.21	1.64	0.01	0.11	2.08	0.15	0.69	0.13	1.53	0.06	0.66
50th-Percentile Queue Length [ft]	55.35	40.88	0.22	2.84	52.08	3.72	17.30	3.28	38.36	1.41	16.46
95th-Percentile Queue Length [veh]	3.99	2.94	0.02	0.20	3.75	0.27	1.25	0.24	2.76	0.10	1.18
95th-Percentile Queue Length [ft]	99.64	73.58	0.40	5.12	93.75	6.69	31.14	5.91	69.05	2.54	29.62

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.33	4.73	3.04	27.99	7.50	5.30	24.69	20.85	24.04	21.99	21.78	21.78
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	8.28			7.60			24.03			21.79		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	9.83											
Intersection LOS	A											
Intersection V/C	0.434											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	30	205	2	3	149	23	12	3	10	1	8	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	205	2	3	149	23	12	3	10	1	8	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	51	1	1	37	6	3	1	3	0	2	1
Total Analysis Volume [veh/h]	30	205	2	3	149	23	12	3	10	1	8	2
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	7.62	0.00	0.00	7.64	0.00	0.00	12.29	12.42	9.32	12.21	12.41	9.45
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh]	0.61	0.61	0.61	0.44	0.44	0.44	0.13	0.13	0.13	0.06	0.06	0.06
95th-Percentile Queue Length [ft]	15.16	15.16	15.16	11.00	11.00	11.00	3.18	3.18	3.18	1.57	1.57	1.57
d_A, Approach Delay [s/veh]	0.96			0.13			11.12			11.86		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.47											
Intersection LOS	B											

**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	All-way stop	Delay (sec / veh):	7.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

**Intersection Setup**

Name	Northbound		Westbound		Eucalyptus Ave	
Approach	Northbound		Westbound		Southeastbound	
Lane Configuration	↵		↶		Y	
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Westbound		Eucalyptus Ave	
Base Volume Input [veh/h]	14	0	0	3	3	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	0	0	3	3	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	0	1	1	3
Total Analysis Volume [veh/h]	14	0	0	3	3	10
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	864	1004	853
Degree of Utilization, x	0.02	0.00	0.02

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.05	0.01	0.05
95th-Percentile Queue Length [ft]	1.23	0.22	1.16
Approach Delay [s/veh]	7.24	6.60	7.29
Approach LOS	A	A	A
Intersection Delay [s/veh]	7.19		
Intersection LOS	A		

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**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	15.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	14	834	97	126	743	45	4	5	5	185	53	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	834	97	126	743	45	4	5	5	185	53	204
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	209	24	32	186	11	1	1	1	46	13	51
Total Analysis Volume [veh/h]	14	834	97	126	743	45	4	5	5	185	53	204
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	17	28	0	0	22	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	27	27	7	31	31	20	20
g / C, Green / Cycle	0.06	0.45	0.45	0.12	0.51	0.51	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.01	0.26	0.07	0.08	0.24	0.24	0.01	0.32
s, saturation flow rate [veh/h]	1597	3192	1425	1597	1676	1643	1357	1396
c, Capacity [veh/h]	90	1419	633	195	855	838	529	550
d1, Uniform Delay [s]	26.94	12.53	9.93	25.10	9.44	9.44	13.45	19.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.79	1.79	0.51	3.56	1.82	1.85	0.02	4.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

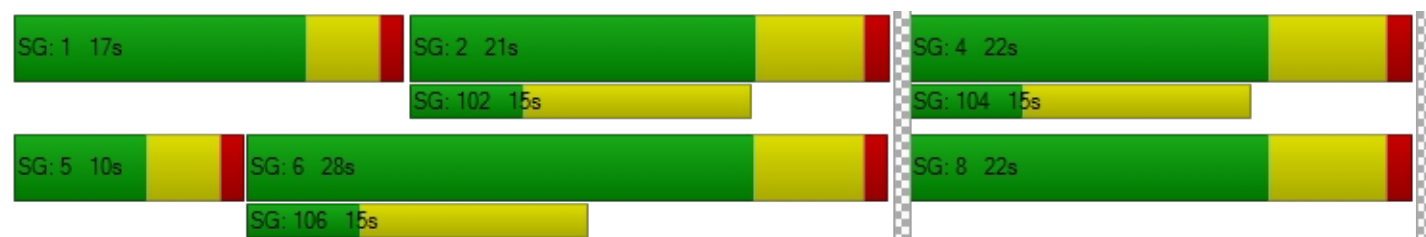
X, volume / capacity	0.16	0.59	0.15	0.65	0.47	0.47	0.03	0.80
d, Delay for Lane Group [s/veh]	27.73	14.32	10.45	28.66	11.26	11.29	13.47	23.97
Lane Group LOS	C	B	B	C	B	B	B	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.20	3.68	0.70	1.74	2.94	2.89	0.11	6.01
50th-Percentile Queue Length [ft]	4.88	92.02	17.60	43.53	73.48	72.24	2.82	150.16
95th-Percentile Queue Length [veh]	0.35	6.63	1.27	3.13	5.29	5.20	0.20	10.03
95th-Percentile Queue Length [ft]	8.78	165.64	31.68	78.35	132.27	130.03	5.07	250.65

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.73	14.32	10.45	28.66	11.27	11.29	13.47	13.47	13.47	23.97	23.97	23.97
Movement LOS	C	B	B	C	B	B	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	14.12			13.67			13.47			23.97		
Approach LOS	B			B			B			C		
d_I, Intersection Delay [s/veh]	15.82											
Intersection LOS	B											
Intersection V/C	0.657											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type:	All-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.682

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Approach												
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Base Volume Input [veh/h]	0	0	0	71	0	84	52	119	0	0	379	177
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	71	0	84	52	119	0	0	379	177
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	18	0	21	13	30	0	0	95	44
Total Analysis Volume [veh/h]	0	0	0	71	0	84	52	119	0	0	379	177
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	585	670	709	815
Degree of Utilization, x	0.00	0.23	0.24	0.68

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.00	0.89	0.94	5.51
95th-Percentile Queue Length [ft]	0.00	22.23	23.52	137.65
Approach Delay [s/veh]	0.00	9.97	9.69	16.35
Approach LOS	A	A	A	C
Intersection Delay [s/veh]	13.94			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Two-way stop	Delay (sec / veh):	16.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.064

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	22	1	5	4	0	0	0	179	22	14	490	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	1	5	4	0	0	0	179	22	14	490	6
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	1	1	0	0	0	45	6	4	123	2
Total Analysis Volume [veh/h]	22	1	5	4	0	0	0	179	22	14	490	6
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.06	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	16.19	15.97	9.96	15.72	15.47	11.38	8.37	0.00	0.00	7.65	0.00	0.00
Movement LOS	C	C	A	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.23	0.23	0.23	0.04	0.04	0.04	0.00	0.00	0.00	1.75	1.75	1.75
95th-Percentile Queue Length [ft]	5.84	5.84	5.84	0.89	0.89	0.89	0.00	0.00	0.00	43.71	43.71	43.71
d_A, Approach Delay [s/veh]	15.07			15.72			0.00			0.21		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	0.80											
Intersection LOS	C											



**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	70.00	100.00	70.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	335	1158	55	44	381	138	107	11	65	34	34	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	335	1158	55	44	381	138	107	11	65	34	34	65
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	290	14	11	95	35	27	3	16	9	9	16
Total Analysis Volume [veh/h]	335	1158	55	44	381	138	107	11	65	34	34	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	5.2	0.0	3.2	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	27	28	0	11	12	0	10	21	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	18	42	42	5	29	29	7	11	11	5	8	8
g / C, Green / Cycle	0.25	0.60	0.60	0.07	0.42	0.42	0.10	0.15	0.15	0.07	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.21	0.36	0.04	0.01	0.16	0.16	0.07	0.01	0.05	0.02	0.02	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	3101	1676	1527	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	402	1901	849	226	699	637	161	253	215	106	195	166
d1, Uniform Delay [s]	24.80	8.98	5.95	30.51	14.18	14.22	30.35	25.41	26.45	31.17	27.88	28.62
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.57	1.46	0.15	0.41	1.61	1.81	4.69	0.07	0.78	1.72	0.42	1.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

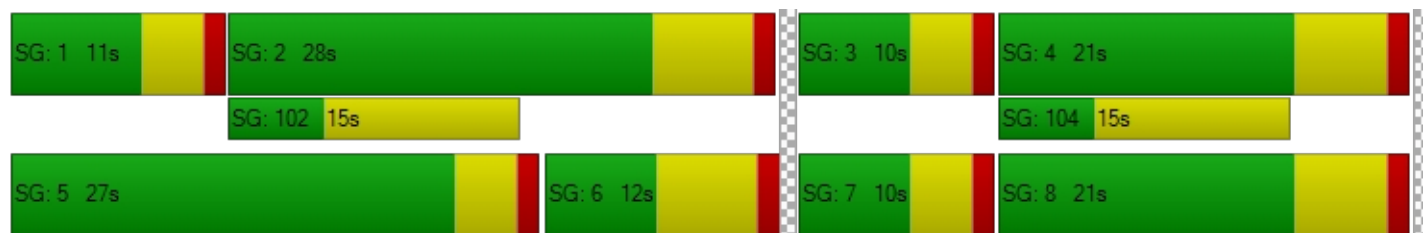
X, volume / capacity	0.83	0.61	0.06	0.19	0.39	0.39	0.67	0.04	0.30	0.32	0.17	0.39
d, Delay for Lane Group [s/veh]	29.38	10.44	6.10	30.93	15.78	16.03	35.03	25.48	27.23	32.90	28.30	30.12
Lane Group LOS	C	B	A	C	B	B	D	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	5.26	4.48	0.29	0.34	2.88	2.70	1.83	0.15	0.94	0.57	0.50	1.01
50th-Percentile Queue Length [ft]	131.62	112.05	7.31	8.52	71.91	67.53	45.80	3.77	23.62	14.14	12.59	25.32
95th-Percentile Queue Length [veh]	9.03	7.95	0.53	0.61	5.18	4.86	3.30	0.27	1.70	1.02	0.91	1.82
95th-Percentile Queue Length [ft]	225.70	198.85	13.16	15.34	129.44	121.56	82.44	6.79	42.51	25.45	22.66	45.57

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.38	10.44	6.10	30.93	15.86	16.03	35.03	25.48	27.23	32.90	28.30	30.12
Movement LOS	C	B	A	C	B	B	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	14.39			17.08			31.69			30.37		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.19											
Intersection LOS	B											
Intersection V/C	0.490											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	40.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↔		↔↓		↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	350.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	651	118	154	311	260	901
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	651	118	154	311	260	901
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	163	30	39	78	65	225
Total Analysis Volume [veh/h]	651	118	154	311	260	901
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	2	7	1	6	7	4
Auxiliary Signal Groups		2,7				1,4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	5.2	3.2	3.6	5.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	26	20	24	50	20	20
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	24	44	22	48	18	42
g / C, Green / Cycle	0.35	0.63	0.31	0.69	0.26	0.59
(v / s)_i Volume / Saturation Flow Rate	0.35	0.07	0.09	0.17	0.15	0.57
s, saturation flow rate [veh/h]	1863	1583	1774	1863	1774	1583
c, Capacity [veh/h]	647	952	550	1277	456	884
d1, Uniform Delay [s]	22.85	6.01	18.25	4.15	22.63	15.45
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	37.05	0.27	0.27	0.45	1.12	35.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

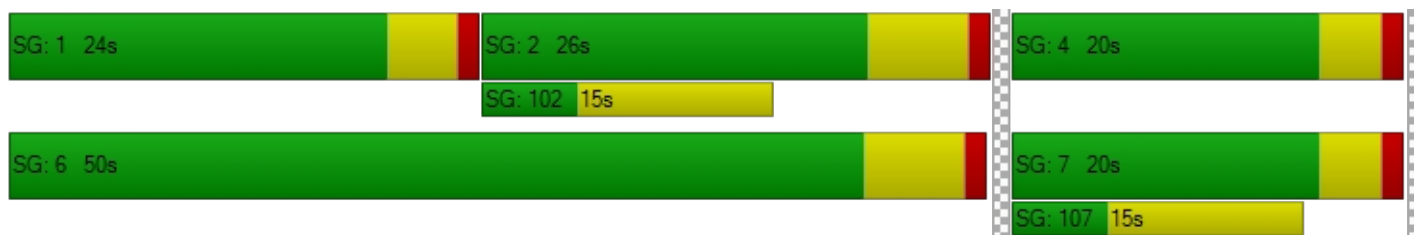
X, volume / capacity	1.01	0.12	0.28	0.24	0.57	1.02
d, Delay for Lane Group [s/veh]	59.90	6.27	18.52	4.60	23.75	50.52
Lane Group LOS	F	A	B	A	C	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	15.46	0.57	1.67	1.03	3.53	19.15
50th-Percentile Queue Length [ft]	386.47	14.34	41.68	25.66	88.15	478.79
95th-Percentile Queue Length [veh]	22.01	1.03	3.00	1.85	6.35	26.73
95th-Percentile Queue Length [ft]	550.13	25.80	75.03	46.18	158.67	668.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	59.90	6.27	18.52	4.60	23.75	50.52
Movement LOS	F	A	B	A	C	F
d_A, Approach Delay [s/veh]	51.67		9.21		44.52	
Approach LOS	D		A		D	
d_I, Intersection Delay [s/veh]	39.96					
Intersection LOS	D					
Intersection V/C	0.654					

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	0
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	165	393	406	300	299	111	163	741	40	258	458	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	165	393	406	300	299	111	163	741	40	258	458	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	98	102	75	75	28	41	185	10	65	115	18
Total Analysis Volume [veh/h]	165	393	406	300	299	111	163	741	40	258	458	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	24	0	12	23	0	13	22	0	12	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	27	27	10	30	30	7	17	17	9	18	18
g / C, Green / Cycle	0.10	0.38	0.38	0.14	0.42	0.42	0.10	0.24	0.24	0.13	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.28	0.10	0.09	0.08	0.05	0.16	0.03	0.08	0.14	0.05
s, saturation flow rate [veh/h]	3101	4567	1425	3101	3192	1425	3101	4567	1425	3101	3192	1425
c, Capacity [veh/h]	316	1756	548	429	1344	600	315	1081	337	391	834	372
d1, Uniform Delay [s]	29.83	14.51	18.54	28.77	12.94	12.72	29.81	24.34	20.98	29.15	22.30	20.10
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.34	0.30	8.74	2.08	0.38	0.68	1.31	0.78	0.15	1.90	0.57	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

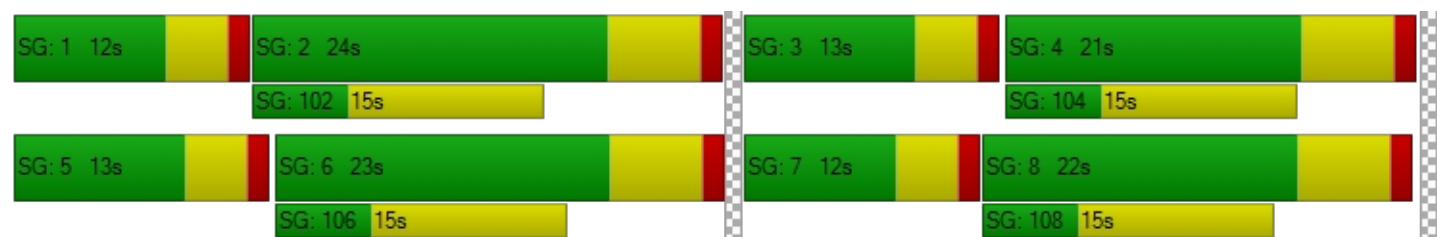
X, volume / capacity	0.52	0.22	0.74	0.70	0.22	0.19	0.52	0.69	0.12	0.66	0.55	0.19
d, Delay for Lane Group [s/veh]	31.17	14.80	27.28	30.85	13.33	13.40	31.13	25.12	21.13	31.05	22.87	20.35
Lane Group LOS	C	B	C	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.29	1.28	6.23	2.35	1.37	1.06	1.27	3.47	0.49	2.03	3.01	0.85
50th-Percentile Queue Length [ft]	32.29	32.09	155.63	58.81	34.34	26.59	31.86	86.78	12.20	50.63	75.28	21.22
95th-Percentile Queue Length [veh]	2.32	2.31	10.32	4.23	2.47	1.91	2.29	6.25	0.88	3.65	5.42	1.53
95th-Percentile Queue Length [ft]	58.11	57.76	257.92	105.85	61.81	47.86	57.35	156.20	21.97	91.13	135.51	38.19

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.17	14.80	27.28	30.85	13.33	13.40	31.13	25.12	21.13	31.05	22.87	20.35
Movement LOS	C	B	C	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	22.86			20.74			25.99			25.32		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.86											
Intersection LOS	C											
Intersection V/C	0.627											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	17.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.653

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↑↞			↞			↞  ↞		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	152	0	393	0	994	478	557	578	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	152	0	393	0	994	478	557	578	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	38	0	98	0	249	120	139	145	0
Total Analysis Volume [veh/h]	0	0	0	152	0	393	0	994	478	557	578	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	27	0	0	18	0	15	33	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		13	13	13	26	26	14	43
g / C, Green / Cycle		0.22	0.22	0.22	0.44	0.44	0.24	0.71
(v / s)_i Volume / Saturation Flow Rate		0.10	0.14	0.14	0.31	0.34	0.18	0.18
s, saturation flow rate [veh/h]		1597	1425	1425	3192	1425	3101	3192
c, Capacity [veh/h]		353	315	315	1397	624	747	2273
d1, Uniform Delay [s]		20.10	21.10	21.10	13.77	14.27	21.07	3.04
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.83	2.01	2.01	3.10	8.74	1.51	0.27
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

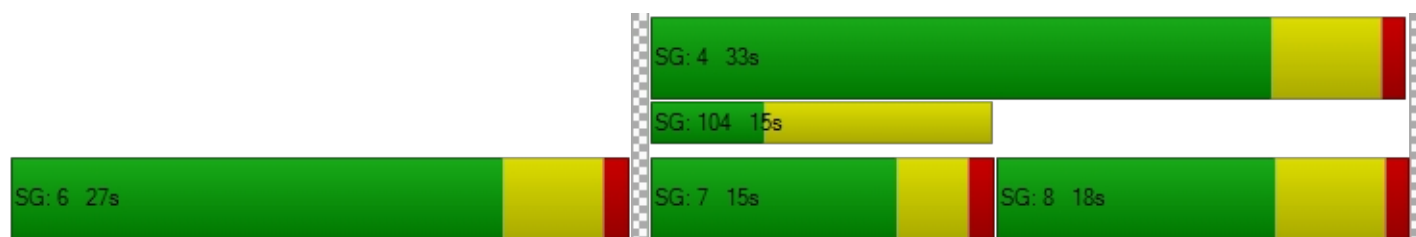
X, volume / capacity		0.43	0.62	0.62	0.71	0.77	0.75	0.25
d, Delay for Lane Group [s/veh]		20.93	23.11	23.11	16.87	23.01	22.58	3.31
Lane Group LOS		C	C	C	B	C	C	A
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		1.70	2.38	2.38	4.95	5.84	3.31	0.59
50th-Percentile Queue Length [ft]		42.62	59.48	59.48	123.65	146.07	82.87	14.81
95th-Percentile Queue Length [veh]		3.07	4.28	4.28	8.59	9.81	5.97	1.07
95th-Percentile Queue Length [ft]		76.72	107.06	107.06	214.83	245.18	149.16	26.66

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	20.93	23.11	23.11	0.00	16.87	23.01	22.58	3.31	0.00
Movement LOS				C	C	C		B	C	C	A	
d_A, Approach Delay [s/veh]	0.00			22.50			18.86			12.77		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	17.30											
Intersection LOS	B											
Intersection V/C	0.653											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↑↵						↵↑↵			↵↑↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	208	0	295	0	0	0	701	441	0	0	915	312
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	0	295	0	0	0	701	441	0	0	915	312
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	0	74	0	0	0	175	110	0	0	229	78
Total Analysis Volume [veh/h]	208	0	295	0	0	0	701	441	0	0	915	312
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	60	60	60		60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19		16	37	19	19
g / C, Green / Cycle	0.32	0.32	0.32		0.27	0.62	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.11		0.23	0.14	0.29	0.22
s, saturation flow rate [veh/h]	1597	1452	1425		3101	3192	3192	1425
c, Capacity [veh/h]	506	460	451		827	1968	1011	451
d1, Uniform Delay [s]	15.78	15.78	15.78		20.85	5.12	19.64	17.94
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.95	2.14	2.18		2.53	0.06	3.40	1.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

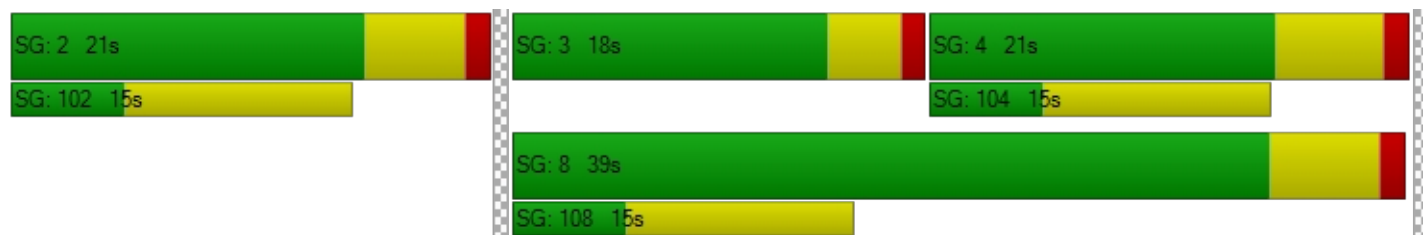
X, volume / capacity	0.36	0.36	0.36		0.85	0.22	0.91	0.69
d, Delay for Lane Group [s/veh]	17.73	17.92	17.96		23.37	5.17	23.04	19.84
Lane Group LOS	B	B	B		C	A	C	B
Critical Lane Group	No	No	Yes		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	1.90	1.75	1.73		4.31	0.80	5.64	3.45
50th-Percentile Queue Length [ft]	47.54	43.86	43.16		107.85	19.91	141.03	86.37
95th-Percentile Queue Length [veh]	3.42	3.16	3.11		7.72	1.43	9.54	6.22
95th-Percentile Queue Length [ft]	85.57	78.95	77.70		193.00	35.83	238.42	155.47

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	17.76	17.92	17.94	0.00	0.00	0.00	23.37	5.17	0.00	0.00	23.04	19.84
Movement LOS	B	B	B				C	A			C	B
d_A, Approach Delay [s/veh]	17.87			0.00			16.34			22.23		
Approach LOS	B			A			B			C		
d_I, Intersection Delay [s/veh]	19.12											
Intersection LOS	B											
Intersection V/C	0.625											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	30.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	52	628	17	159	528	235	62	173	22	19	703	239
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	628	17	159	528	235	62	173	22	19	703	239
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	157	4	40	132	59	16	43	6	5	176	60
Total Analysis Volume [veh/h]	52	628	17	159	528	235	62	173	22	19	703	239
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	13	24	0	10	26	0	10	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	20	20	10	25	25	6	28	28	4	26	26
g / C, Green / Cycle	0.08	0.28	0.28	0.15	0.35	0.35	0.08	0.40	0.40	0.05	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.01	0.11	0.27	0.27	0.04	0.07	0.07	0.01	0.33	0.33
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1334	1416	1487	1430	1416	1487	1360
c, Capacity [veh/h]	109	799	357	210	525	471	116	597	574	76	556	508
d1, Uniform Delay [s]	30.94	23.17	18.27	28.61	20.07	20.07	30.86	13.43	13.45	31.75	20.52	20.52
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.28	0.28
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	7.65	0.25	5.53	10.21	11.30	3.81	0.13	0.14	1.68	11.62	12.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	0.79	0.05	0.76	0.77	0.77	0.54	0.16	0.17	0.25	0.89	0.89
d, Delay for Lane Group [s/veh]	34.13	30.82	18.53	34.15	30.29	31.37	34.67	13.56	13.59	33.43	32.14	33.05
Lane Group LOS	C	C	B	C	C	C	C	B	B	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.89	5.14	0.21	2.77	6.84	6.28	1.06	0.89	0.88	0.33	8.28	7.70
50th-Percentile Queue Length [ft]	22.14	128.49	5.21	69.32	171.00	156.96	26.60	22.35	22.00	8.14	207.08	192.54
95th-Percentile Queue Length [veh]	1.59	8.86	0.37	4.99	11.13	10.39	1.92	1.61	1.58	0.59	13.00	12.25
95th-Percentile Queue Length [ft]	39.84	221.44	9.37	124.78	278.23	259.69	47.88	40.23	39.60	14.65	325.07	306.32

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.13	30.82	18.53	34.15	30.54	31.37	34.67	13.57	13.59	33.43	32.41	33.05
Movement LOS	C	C	B	C	C	C	C	B	B	C	C	C
d_A, Approach Delay [s/veh]	30.77			31.38			18.66			32.59		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	30.49											
Intersection LOS	C											
Intersection V/C	0.709											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	2	0	0
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	23	493	478	56	542	19	2	151	18	893	201	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	493	478	56	542	19	2	151	18	893	201	23
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	123	120	14	136	5	1	38	5	223	50	6
Total Analysis Volume [veh/h]	23	493	478	56	542	19	2	151	18	893	201	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	26	12	23	0	10	21	0	26	37	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	31	57	6	32	32	2	12	24	33
g / C, Green / Cycle	0.05	0.38	0.71	0.07	0.40	0.40	0.03	0.14	0.30	0.41
(v / s)_i Volume / Saturation Flow Rate	0.01	0.16	0.34	0.04	0.17	0.17	0.00	0.09	0.29	0.14
s, saturation flow rate [veh/h]	1573	3146	1404	1573	1652	1633	1573	1652	3056	1623
c, Capacity [veh/h]	84	1201	954	115	663	655	49	240	917	672
d1, Uniform Delay [s]	36.39	18.13	6.24	35.66	17.28	17.29	37.58	32.16	27.69	15.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.75	1.04	1.88	3.20	1.99	2.02	0.33	2.70	9.01	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

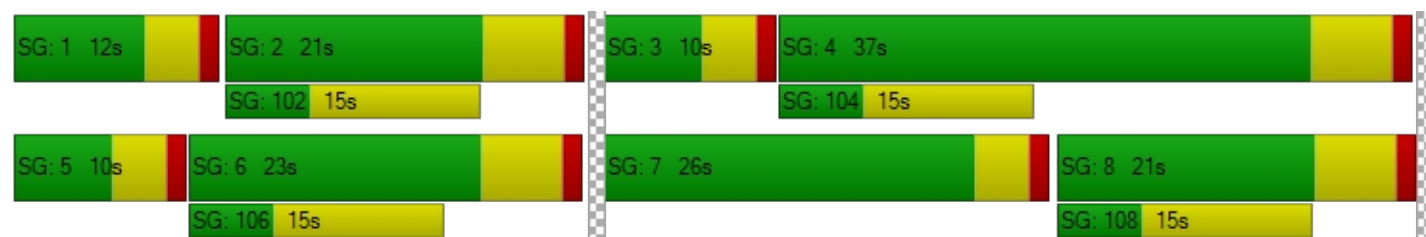
X, volume / capacity	0.27	0.41	0.50	0.49	0.43	0.43	0.04	0.63	0.97	0.33
d, Delay for Lane Group [s/veh]	38.13	19.17	8.11	38.86	19.27	19.31	37.92	34.86	36.70	16.22
Lane Group LOS	D	B	A	D	B	B	D	C	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.45	3.21	3.23	1.10	3.75	3.72	0.04	2.78	8.85	2.57
50th-Percentile Queue Length [ft]	11.35	80.19	80.73	27.62	93.71	92.89	1.03	69.58	221.36	64.25
95th-Percentile Queue Length [veh]	0.82	5.77	5.81	1.99	6.75	6.69	0.07	5.01	13.73	4.63
95th-Percentile Queue Length [ft]	20.43	144.35	145.32	49.72	168.68	167.21	1.85	125.25	343.36	115.64

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	38.13	19.17	8.11	38.86	19.29	19.31	37.92	34.86	0.00	36.70	16.22	16.22
Movement LOS	D	B	A	D	B	B	D	C		D	B	B
d_A, Approach Delay [s/veh]	14.29			21.07			34.90			32.59		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	23.93											
Intersection LOS	C											
Intersection V/C	0.663											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	311	666	199	94	376	423	268	549	140	205	660	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	666	199	94	376	423	268	549	140	205	660	96
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	167	50	24	94	106	67	137	35	51	165	24
Total Analysis Volume [veh/h]	311	666	199	94	376	423	268	549	140	205	660	96
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	24	0	10	22	0	12	22	0	14	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	30	30	7	27	27	9	17	17	8	16	16
g / C, Green / Cycle	0.14	0.43	0.43	0.10	0.38	0.38	0.13	0.25	0.25	0.12	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.10	0.15	0.14	0.03	0.08	0.30	0.09	0.12	0.10	0.07	0.14	0.07
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	443	1945	607	303	1738	542	415	1122	350	362	1043	325
d1, Uniform Delay [s]	28.58	13.51	13.41	29.39	14.63	19.09	28.74	22.64	22.09	29.25	24.36	22.35
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.04	0.48	1.44	0.58	0.29	10.62	1.69	0.33	0.74	1.40	0.64	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.70	0.34	0.33	0.31	0.22	0.78	0.65	0.49	0.40	0.57	0.63	0.30
d, Delay for Lane Group [s/veh]	30.62	13.99	14.85	29.97	14.92	29.71	30.43	22.97	22.83	30.65	25.00	22.84
Lane Group LOS	C	B	B	C	B	C	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.43	2.12	2.05	0.71	1.23	6.83	2.08	2.39	1.83	1.59	3.07	1.25
50th-Percentile Queue Length [ft]	60.73	52.89	51.21	17.83	30.82	170.70	51.96	59.79	45.78	39.77	76.63	31.18
95th-Percentile Queue Length [veh]	4.37	3.81	3.69	1.28	2.22	11.11	3.74	4.31	3.30	2.86	5.52	2.25
95th-Percentile Queue Length [ft]	109.31	95.20	92.18	32.09	55.48	277.83	93.53	107.63	82.41	71.58	137.94	56.13

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.62	13.99	14.85	29.97	14.92	29.71	30.43	22.97	22.83	30.65	25.00	22.84
Movement LOS	C	B	B	C	B	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.53			23.51			25.04			25.99		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	23.01											
Intersection LOS	C											
Intersection V/C	0.628											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 67: Archibald Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	5.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Eucalyptus Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	480.00	100.00	100.00	100.00
Speed [mph]	45.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Eucalyptus Ave	
Base Volume Input [veh/h]	1326	27	14	650	10	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1326	27	14	650	10	50
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	332	7	4	163	3	13
Total Analysis Volume [veh/h]	1326	27	14	650	10	50
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	5.2	0.0	3.6	5.2	3.2	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	15	0	10	25	55	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	1.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	64	64	4	70	6
g / C, Green / Cycle	0.80	0.80	0.05	0.88	0.07
(v / s)_i Volume / Saturation Flow Rate	0.45	0.46	0.01	0.23	0.05
s, saturation flow rate [veh/h]	1487	1477	1416	2831	1287
c, Capacity [veh/h]	1189	1181	70	2475	98
d1, Uniform Delay [s]	2.94	2.96	36.51	0.82	35.83
k, delay calibration	0.50	0.50	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.98	2.02	1.38	0.26	6.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.57	0.20	0.26	0.61
d, Delay for Lane Group [s/veh]	4.92	4.98	37.89	1.08	41.98
Lane Group LOS	A	A	D	A	D
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh]	1.72	1.73	0.28	0.09	1.25
50th-Percentile Queue Length [ft]	42.91	43.33	6.96	2.22	31.26
95th-Percentile Queue Length [veh]	3.09	3.12	0.50	0.16	2.25
95th-Percentile Queue Length [ft]	77.24	78.00	12.53	4.00	56.28

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	4.95	4.98	37.89	1.08	41.98	41.98
Movement LOS	A	A	D	A	D	D
d_A, Approach Delay [s/veh]	4.95		1.86		41.98	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	5.03					
Intersection LOS	A					
Intersection V/C	0.515					

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	223	895	174	95	956	99	125	426	103	157	435	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	895	174	95	956	99	125	426	103	157	435	89
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	224	44	24	239	25	31	107	26	39	109	22
Total Analysis Volume [veh/h]	223	895	174	95	956	99	125	426	103	157	435	89
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	24	0	12	22	0	9	25	0	9	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	12	26	26	7	20	20	32	23	23	32	23
g / C, Green / Cycle	0.17	0.36	0.36	0.09	0.29	0.29	0.46	0.33	0.33	0.46	0.33
(v / s)_i Volume / Saturation Flow Rate	0.14	0.28	0.12	0.06	0.22	0.22	0.13	0.16	0.16	0.16	0.31
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1663	979	1676	1565	987	1693
c, Capacity [veh/h]	274	1164	519	149	915	477	336	549	513	472	565
d1, Uniform Delay [s]	27.93	19.64	16.10	30.58	22.75	22.76	17.05	18.90	18.92	14.39	22.51
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.25
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.84	4.92	1.73	4.43	5.83	10.81	0.68	0.70	0.76	0.41	14.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.77	0.33	0.64	0.76	0.76	0.37	0.50	0.50	0.33	0.93
d, Delay for Lane Group [s/veh]	33.77	24.56	17.83	35.00	28.58	33.57	17.74	19.59	19.68	14.80	36.59
Lane Group LOS	C	C	B	D	C	C	B	B	B	B	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.75	6.40	2.04	1.63	5.41	6.31	1.17	3.27	3.09	1.48	9.50
50th-Percentile Queue Length [ft]	93.87	159.99	50.92	40.71	135.16	157.67	29.31	81.84	77.27	36.92	237.57
95th-Percentile Queue Length [veh]	6.76	10.55	3.67	2.93	9.22	10.43	2.11	5.89	5.56	2.66	14.56
95th-Percentile Queue Length [ft]	168.97	263.71	91.65	73.27	230.49	260.63	52.75	147.31	139.08	66.46	363.96

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.77	24.56	17.83	35.00	29.95	33.57	17.74	19.62	19.68	14.80	36.59	36.59
Movement LOS	C	C	B	D	C	C	B	B	B	B	D	D
d_A, Approach Delay [s/veh]	25.24			30.68			19.27			31.57		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	27.00											
Intersection LOS	C											
Intersection V/C	0.722											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.603

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	181	681	76	104	1078	112	117	245	268	242	338	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	181	681	76	104	1078	112	117	245	268	242	338	86
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	170	19	26	270	28	29	61	67	61	85	22
Total Analysis Volume [veh/h]	181	681	76	104	1078	112	117	245	268	242	338	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	29	0	10	21	0	9	22	0	9	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	2.2	3.8	0.0	2.2	3.8	0.0	2.0	3.4	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	3.20	4.80	4.80	3.20	4.80	4.80	4.40	4.40	4.40	4.40	4.40	4.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	3.80	3.80	2.20	3.80	3.80	0.00	3.40	3.40	0.00	3.40	3.40
g_i, Effective Green Time [s]	6	27	27	5	26	26	26	17	17	26	17	17
g / C, Green / Cycle	0.09	0.38	0.38	0.08	0.37	0.37	0.37	0.24	0.24	0.37	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.16	0.03	0.25	0.25	0.11	0.15	0.18	0.23	0.13	0.13
s, saturation flow rate [veh/h]	3101	3192	1592	3101	3192	1597	1084	1676	1482	1053	1676	1626
c, Capacity [veh/h]	270	1249	623	236	1215	608	423	380	336	374	392	380
d1, Uniform Delay [s]	30.98	15.39	15.41	30.90	17.87	17.87	16.82	24.52	25.56	19.48	23.55	23.58
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.87	0.97	1.96	1.28	2.74	5.39	0.35	1.84	4.36	1.88	1.19	1.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.67	0.40	0.41	0.44	0.65	0.65	0.28	0.64	0.80	0.65	0.55	0.55
d, Delay for Lane Group [s/veh]	33.85	16.37	17.37	32.19	20.61	23.26	17.17	26.35	29.92	21.36	24.74	24.82
Lane Group LOS	C	B	B	C	C	C	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.47	2.72	2.90	0.82	5.06	5.52	1.21	3.48	4.16	2.83	2.91	2.85
50th-Percentile Queue Length [ft]	36.78	67.88	72.48	20.42	126.56	137.93	30.19	87.05	103.90	70.74	72.84	71.31
95th-Percentile Queue Length [veh]	2.65	4.89	5.22	1.47	8.75	9.37	2.17	6.27	7.48	5.09	5.24	5.13
95th-Percentile Queue Length [ft]	66.20	122.18	130.46	36.76	218.81	234.24	54.33	156.68	187.02	127.34	131.12	128.36

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.85	16.63	17.37	32.19	21.31	23.26	17.17	26.35	29.92	21.36	24.77	24.82
Movement LOS	C	B	B	C	C	C	B	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.01			22.35			26.17			23.54		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	22.63											
Intersection LOS	C											
Intersection V/C	0.603											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	142	342	62	38	650	35	48	316	340	259	170	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	342	62	38	650	35	48	316	340	259	170	18
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	86	16	10	163	9	12	79	85	65	43	5
Total Analysis Volume [veh/h]	142	342	62	38	650	35	48	316	340	259	170	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.0	3.2	4.8	3.0	3.0	4.4	3.2	3.0	4.4	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	14	21	14	14	21	12	12	21	14	14	23	14
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	12	36	47	5	29	36	5	12	26	9	16	23
g / C, Green / Cycle	0.17	0.52	0.67	0.07	0.41	0.52	0.07	0.17	0.37	0.13	0.23	0.33
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.04	0.01	0.14	0.02	0.02	0.10	0.24	0.08	0.05	0.01
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	532	2356	916	216	1891	693	225	554	488	392	727	420
d1, Uniform Delay [s]	25.18	8.86	4.68	30.68	14.01	9.46	30.58	26.52	19.89	29.14	22.05	17.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.13	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.27	0.13	0.14	0.39	0.50	0.03	0.47	0.92	2.09	1.90	0.16	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

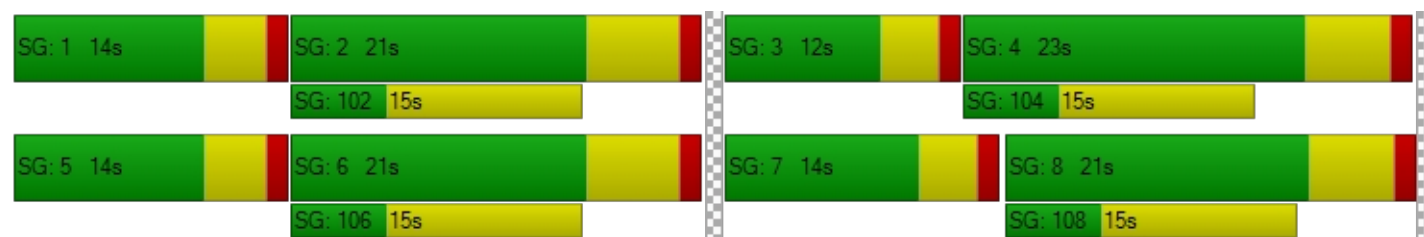
X, volume / capacity	0.27	0.15	0.07	0.18	0.34	0.05	0.21	0.57	0.70	0.66	0.23	0.04
d, Delay for Lane Group [s/veh]	25.45	8.99	4.82	31.06	14.51	9.49	31.05	27.45	21.98	31.04	22.21	17.69
Lane Group LOS	C	A	A	C	B	A	C	C	C	C	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.97	0.77	0.27	0.30	2.12	0.24	0.37	2.30	4.51	2.03	1.07	0.19
50th-Percentile Queue Length [ft]	24.25	19.37	6.74	7.39	53.00	6.10	9.33	57.61	112.68	50.81	26.63	4.86
95th-Percentile Queue Length [veh]	1.75	1.39	0.49	0.53	3.82	0.44	0.67	4.15	7.99	3.66	1.92	0.35
95th-Percentile Queue Length [ft]	43.66	34.87	12.14	13.30	95.40	10.99	16.79	103.70	199.72	91.45	47.93	8.74

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	25.45	8.99	4.82	31.06	14.51	9.49	31.05	27.45	21.98	31.04	22.21	17.69
Movement LOS	C	A	A	C	B	A	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	12.80			15.14			25.05			27.14		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.71											
Intersection LOS	B											
Intersection V/C	0.473											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	14.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	212	982	0	0	856	491	0	0	0	432	0	334
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	982	0	0	856	491	0	0	0	432	0	334
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	246	0	0	214	123	0	0	0	108	0	84
Total Analysis Volume [veh/h]	212	982	0	0	856	491	0	0	0	432	0	334
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	23	44	0	0	21	0	0	0	0	0	16	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	11	42	29	29		14	14	14
g / C, Green / Cycle	0.18	0.70	0.49	0.49		0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.13	0.31	0.27	0.34		0.17	0.17	0.17
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1532	1425
c, Capacity [veh/h]	291	2237	1548	691		371	356	331
d1, Uniform Delay [s]	23.12	3.88	10.87	12.14		21.18	21.23	21.33
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	3.47	0.63	1.43	6.11		2.54	2.77	3.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.73	0.44	0.55	0.71		0.71	0.72	0.74
d, Delay for Lane Group [s/veh]	26.59	4.51	12.30	18.25		23.72	24.00	24.54
Lane Group LOS	C	A	B	B		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	2.80	1.37	3.36	5.08		3.26	3.19	3.08
50th-Percentile Queue Length [ft]	70.04	34.13	84.04	127.11		81.46	79.86	77.11
95th-Percentile Queue Length [veh]	5.04	2.46	6.05	8.78		5.86	5.75	5.55
95th-Percentile Queue Length [ft]	126.07	61.43	151.27	219.56		146.62	143.74	138.79

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.59	4.51	0.00	0.00	12.30	18.25	0.00	0.00	0.00	23.83	24.00	24.40
Movement LOS	C	A			B	B				C	C	C
d_A, Approach Delay [s/veh]	8.43			14.47			0.00			24.07		
Approach LOS	A			B			A			C		
d_I, Intersection Delay [s/veh]	14.51											
Intersection LOS	B											
Intersection V/C	0.649											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.667

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							+					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	843	439	286	1007	0	347	2	234	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	843	439	286	1007	0	347	2	234	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	211	110	72	252	0	87	1	59	0	0	0
Total Analysis Volume [veh/h]	0	843	439	286	1007	0	347	2	234	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	22	43	0	0	17	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	25	25	14	41	15	15	
g / C, Green / Cycle	0.42	0.42	0.23	0.68	0.25	0.25	
(v / s)_j Volume / Saturation Flow Rate	0.26	0.30	0.18	0.32	0.19	0.19	
s, saturation flow rate [veh/h]	3192	1482	1597	3192	1597	1450	
c, Capacity [veh/h]	1343	623	366	2181	399	363	
d1, Uniform Delay [s]	13.68	14.31	21.70	4.39	20.86	20.88	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.23	6.55	3.65	0.71	3.07	3.42	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

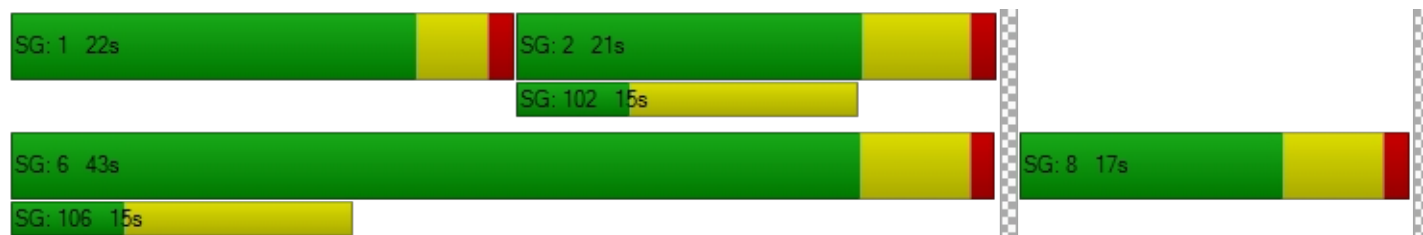
X, volume / capacity	0.63	0.70	0.78	0.46	0.76	0.77	
d, Delay for Lane Group [s/veh]	15.92	20.86	25.35	5.10	23.93	24.29	
Lane Group LOS	B	C	C	A	C	C	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	4.02	5.06	3.69	1.64	3.79	3.50	
50th-Percentile Queue Length [ft]	100.51	126.50	92.31	41.02	94.87	87.38	
95th-Percentile Queue Length [veh]	7.24	8.75	6.65	2.95	6.83	6.29	
95th-Percentile Queue Length [ft]	180.92	218.72	166.16	73.84	170.77	157.28	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	15.92	20.86	25.35	5.10	0.00	23.98	24.29	24.29	0.00	0.00	0.00
Movement LOS		B	C	C	A		C	C	C			
d_A, Approach Delay [s/veh]	17.61			9.58			24.10			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	15.52											
Intersection LOS	B											
Intersection V/C	0.667											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	17.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.792

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	160	807	0	0	922	680	0	0	0	205	2	306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	807	0	0	922	680	0	0	0	205	2	306
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	202	0	0	231	170	0	0	0	51	1	77
Total Analysis Volume [veh/h]	160	807	0	0	922	680	0	0	0	205	2	306
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	10	43	0	0	33	0	0	0	0	0	17	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	8	41	31	31		15	15
g / C, Green / Cycle	0.13	0.68	0.52	0.52		0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.10	0.25	0.29	0.48		0.13	0.21
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	213	2181	1649	736		399	356
d1, Uniform Delay [s]	25.04	4.03	9.85	13.41		19.39	21.49
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	5.28	0.48	1.37	19.03		1.04	6.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	0.37	0.56	0.92		0.52	0.86
d, Delay for Lane Group [s/veh]	30.32	4.51	11.23	32.43		20.43	27.56
Lane Group LOS	C	A	B	C		C	C
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	2.25	1.07	3.23	9.73		2.29	4.17
50th-Percentile Queue Length [ft]	56.17	26.79	80.64	243.29		57.37	104.27
95th-Percentile Queue Length [veh]	4.04	1.93	5.81	14.85		4.13	7.51
95th-Percentile Queue Length [ft]	101.10	48.22	145.16	371.20		103.26	187.69

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.32	4.51	0.00	0.00	11.23	32.43	0.00	0.00	0.00	20.43	20.43	27.56
Movement LOS	C	A			B	C				C	C	C
d_A, Approach Delay [s/veh]	8.78			20.23			0.00			24.68		
Approach LOS	A			C			A			C		
d_I, Intersection Delay [s/veh]	17.38											
Intersection LOS	B											
Intersection V/C	0.792											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	21.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑			←↑↑			↑↑					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	581	251	416	709	0	380	1	226	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	581	251	416	709	0	380	1	226	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	145	63	104	177	0	95	0	57	0	0	0
Total Analysis Volume [veh/h]	0	581	251	416	709	0	380	1	226	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	20	0	19	39	0	0	21	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	19	19	17	38	18	18	
g / C, Green / Cycle	0.32	0.32	0.28	0.63	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.25	0.26	0.26	0.22	0.24	0.16	
s, saturation flow rate [veh/h]	1676	1576	1597	3192	1597	1425	
c, Capacity [veh/h]	529	498	452	2019	480	429	
d1, Uniform Delay [s]	18.68	19.08	20.84	5.21	19.26	17.43	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	11.18	15.28	8.04	0.48	3.00	1.01	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.79	0.84	0.92	0.35	0.79	0.53	
d, Delay for Lane Group [s/veh]	29.85	34.36	28.88	5.69	22.26	18.43	
Lane Group LOS	C	C	C	A	C	B	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	6.09	6.66	5.72	1.29	4.57	2.36	
50th-Percentile Queue Length [ft]	152.29	166.39	143.12	32.25	114.37	59.01	
95th-Percentile Queue Length [veh]	10.14	10.89	9.65	2.32	8.08	4.25	
95th-Percentile Queue Length [ft]	253.48	272.16	241.22	58.04	202.06	106.21	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	31.13	34.36	28.88	5.69	0.00	22.26	22.26	18.43	0.00	0.00	0.00
Movement LOS		C	C	C	A		C	C	B			
d_A, Approach Delay [s/veh]	32.11			14.27			20.84			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	21.61											
Intersection LOS	C											
Intersection V/C	0.763											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	322	456	0	0	993	339	0	0	0	304	5	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	322	456	0	0	993	339	0	0	0	304	5	150
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	114	0	0	248	85	0	0	0	76	1	38
Total Analysis Volume [veh/h]	322	456	0	0	993	339	0	0	0	304	5	150
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	30	43	0	0	13	0	0	0	0	0	17	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	15	41	24	24		15	15
g / C, Green / Cycle	0.25	0.68	0.40	0.40		0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.20	0.10	0.28	0.30		0.19	0.11
s, saturation flow rate [veh/h]	1597	4567	3192	1477		1598	1425
c, Capacity [veh/h]	405	3121	1266	586		399	356
d1, Uniform Delay [s]	20.94	3.34	15.14	15.62		20.92	18.86
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	3.60	0.10	3.27	8.90		3.22	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

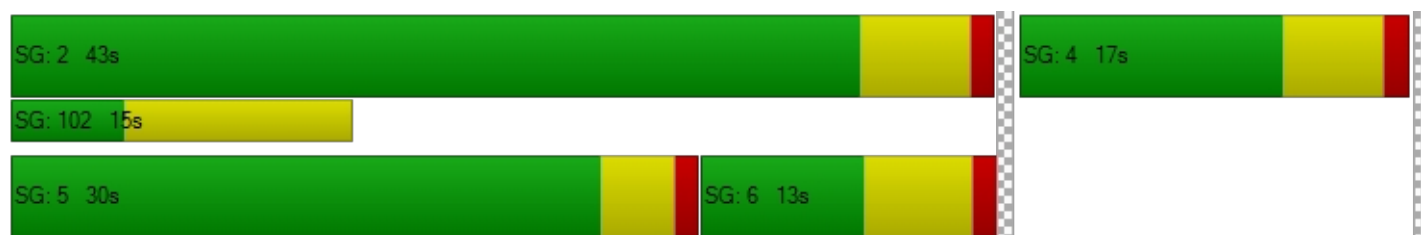
X, volume / capacity	0.80	0.15	0.70	0.76		0.77	0.42
d, Delay for Lane Group [s/veh]	24.54	3.44	18.40	24.52		24.14	19.65
Lane Group LOS	C	A	B	C		C	B
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh]	4.08	0.36	4.70	5.70		3.87	1.61
50th-Percentile Queue Length [ft]	102.08	8.90	117.44	142.57		96.69	40.36
95th-Percentile Queue Length [veh]	7.35	0.64	8.25	9.62		6.96	2.91
95th-Percentile Queue Length [ft]	183.75	16.03	206.31	240.48		174.04	72.65

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.54	3.44	0.00	0.00	19.05	24.52	0.00	0.00	0.00	24.14	24.14	19.65
Movement LOS	C	A			B	C				C	C	B
d_A, Approach Delay [s/veh]	12.17			20.44			0.00			22.68		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	18.34											
Intersection LOS	B											
Intersection V/C	0.696											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	712	396	306	985	0	79	1	450	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	712	396	306	985	0	79	1	450	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	178	99	77	246	0	20	0	113	0	0	0
Total Analysis Volume [veh/h]	0	712	396	306	985	0	79	1	450	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	22	0	15	37	0	0	23	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	20	20	13	35	21	21	
g / C, Green / Cycle	0.33	0.33	0.22	0.58	0.35	0.35	
(v / s)_j Volume / Saturation Flow Rate	0.22	0.28	0.19	0.22	0.05	0.32	
s, saturation flow rate [veh/h]	3192	1425	1597	4567	1598	1425	
c, Capacity [veh/h]	1064	475	346	2664	559	499	
d1, Uniform Delay [s]	17.16	18.46	22.77	6.64	13.34	18.53	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.18	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.35	15.70	7.52	0.40	0.12	9.82	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.67	0.83	0.88	0.37	0.14	0.90	
d, Delay for Lane Group [s/veh]	20.51	34.17	30.30	7.04	13.46	28.34	
Lane Group LOS	C	C	C	A	B	C	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	4.06	6.33	4.40	1.61	0.65	6.29	
50th-Percentile Queue Length [ft]	101.41	158.37	110.04	40.19	16.23	157.25	
95th-Percentile Queue Length [veh]	7.30	10.46	7.84	2.89	1.17	10.40	
95th-Percentile Queue Length [ft]	182.54	261.56	196.06	72.34	29.22	260.08	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	20.51	34.17	30.30	7.04	0.00	13.46	13.46	28.34	0.00	0.00	0.00
Movement LOS		C	C	C	A		B	B	C			
d_A, Approach Delay [s/veh]	25.39			12.55			26.10			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	19.86											
Intersection LOS	B											
Intersection V/C	0.785											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.514

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TTT			TTTTT			TTT			TTT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	118	995	63	276	805	145	115	335	132	87	262	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	118	995	63	276	805	145	115	335	132	87	262	144
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	249	16	69	201	36	29	84	33	22	66	36
Total Analysis Volume [veh/h]	118	995	63	276	805	145	115	335	132	87	262	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	29	0	10	21	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	27	27	8	28	28	19	19	19	19	19	19
g / C, Green / Cycle	0.12	0.45	0.45	0.13	0.46	0.46	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.08	0.25	0.25	0.10	0.20	0.11	0.15	0.16	0.17	0.12	0.14	0.15
s, saturation flow rate [veh/h]	1416	2831	1442	2750	4050	1264	779	1487	1347	736	1487	1314
c, Capacity [veh/h]	176	1274	649	367	1858	580	262	471	426	241	471	416
d1, Uniform Delay [s]	25.08	12.06	12.06	25.05	10.97	9.93	23.51	16.75	16.80	23.75	16.35	16.43
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.33	1.71	3.34	3.14	0.74	1.03	1.15	0.88	1.00	0.91	0.68	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

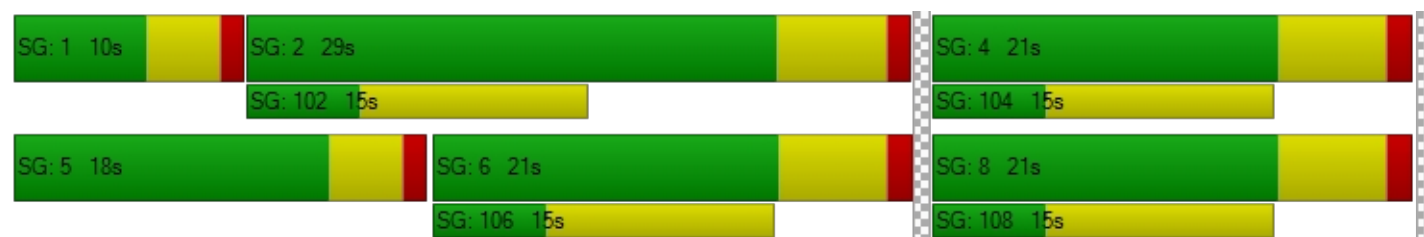
X, volume / capacity	0.67	0.55	0.55	0.75	0.43	0.25	0.44	0.52	0.52	0.36	0.45	0.46
d, Delay for Lane Group [s/veh]	29.42	13.77	15.41	28.19	11.70	10.96	24.66	17.63	17.80	24.65	17.02	17.23
Lane Group LOS	C	B	B	C	B	B	C	B	B	C	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.66	3.02	3.37	1.86	2.02	1.09	1.47	2.46	2.28	1.11	2.09	1.92
50th-Percentile Queue Length [ft]	41.61	75.42	84.29	46.59	50.52	27.31	36.78	61.42	56.97	27.63	52.15	47.98
95th-Percentile Queue Length [veh]	3.00	5.43	6.07	3.35	3.64	1.97	2.65	4.42	4.10	1.99	3.75	3.45
95th-Percentile Queue Length [ft]	74.90	135.75	151.71	83.86	90.94	49.16	66.21	110.55	102.55	49.74	93.87	86.36

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.42	14.26	15.41	28.19	11.70	10.96	24.66	17.68	17.80	24.65	17.06	17.23
Movement LOS	C	B	B	C	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	15.84			15.33			19.08			18.45		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.57											
Intersection LOS	B											
Intersection V/C	0.514											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.440

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	63	506	34	179	495	141	128	257	52	19	153	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	506	34	179	495	141	128	257	52	19	153	112
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	127	9	45	124	35	32	64	13	5	38	28
Total Analysis Volume [veh/h]	63	506	34	179	495	141	128	257	52	19	153	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	13	24	0	15	26	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	6	32	32	10	37	37	8	15	15	21	11	11
g / C, Green / Cycle	0.08	0.46	0.46	0.15	0.53	0.53	0.12	0.22	0.22	0.30	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.04	0.16	0.16	0.11	0.19	0.19	0.08	0.09	0.10	0.02	0.08	0.09
s, saturation flow rate [veh/h]	1597	1676	1706	1597	1676	1615	1597	1676	1581	1104	1676	1452
c, Capacity [veh/h]	132	774	787	239	886	854	187	369	348	387	265	229
d1, Uniform Delay [s]	30.68	12.08	12.09	28.51	9.64	9.64	29.67	23.49	23.53	20.19	27.04	27.22
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.69	1.22	1.21	4.68	1.16	1.21	4.40	0.78	0.86	0.05	1.58	2.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	0.35	0.35	0.75	0.37	0.37	0.69	0.43	0.43	0.05	0.52	0.56
d, Delay for Lane Group [s/veh]	33.37	13.30	13.29	33.19	10.80	10.86	34.07	24.27	24.38	20.24	28.62	29.33
Lane Group LOS	C	B	B	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.03	2.45	2.50	2.93	2.52	2.45	2.15	2.14	2.06	0.22	2.07	1.96
50th-Percentile Queue Length [ft]	25.87	61.33	62.53	73.14	63.11	61.20	53.85	53.49	51.56	5.56	51.73	48.99
95th-Percentile Queue Length [veh]	1.86	4.42	4.50	5.27	4.54	4.41	3.88	3.85	3.71	0.40	3.72	3.53
95th-Percentile Queue Length [ft]	46.57	110.39	112.56	131.65	113.59	110.16	96.93	96.28	92.80	10.01	93.12	88.18

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.37	13.30	13.29	33.19	10.82	10.86	34.07	24.31	24.38	20.24	28.69	29.33
Movement LOS	C	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	15.39			15.74			27.18			28.38		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.66											
Intersection LOS	B											
Intersection V/C	0.440											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	8.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.324

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑↑↑			↵ ↑↑↑			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	65	736	43	138	1073	14	18	7	32	23	12	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	736	43	138	1073	14	18	7	32	23	12	74
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	184	11	35	268	4	5	2	8	6	3	19
Total Analysis Volume [veh/h]	65	736	43	138	1073	14	18	7	32	23	12	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	19	30	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	40	40	8	42	42	6	6	6	6
g / C, Green / Cycle	0.09	0.66	0.66	0.13	0.70	0.70	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.04	0.16	0.16	0.09	0.22	0.22	0.02	0.03	0.02	0.06
s, saturation flow rate [veh/h]	1597	3192	1630	1597	3192	1665	1175	1523	1227	1455
c, Capacity [veh/h]	147	2116	1081	206	2234	1166	169	164	210	157
d1, Uniform Delay [s]	25.78	4.06	4.07	24.91	3.48	3.48	28.00	24.50	26.27	25.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.08	0.27	0.54	3.74	0.38	0.72	0.28	0.73	0.23	2.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

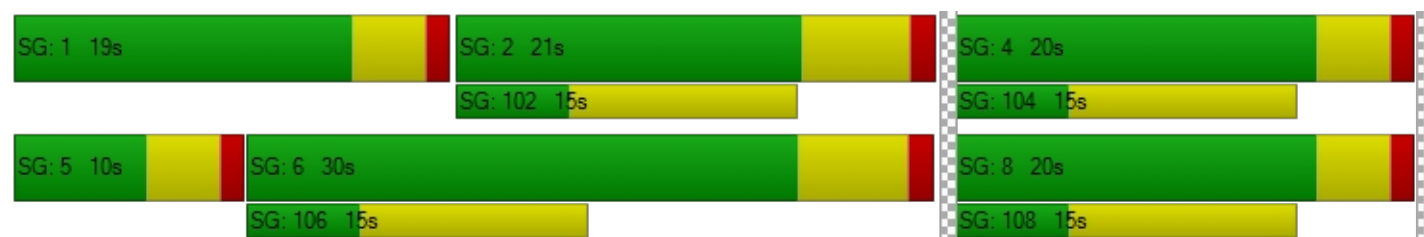
X, volume / capacity	0.44	0.24	0.24	0.67	0.32	0.32	0.11	0.24	0.11	0.55
d, Delay for Lane Group [s/veh]	27.85	4.33	4.60	28.65	3.86	4.20	28.28	25.23	26.50	28.32
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.88	0.77	0.87	1.90	0.88	1.03	0.24	0.50	0.30	1.18
50th-Percentile Queue Length [ft]	22.10	19.35	21.85	47.59	21.89	25.65	6.11	12.39	7.44	29.59
95th-Percentile Queue Length [veh]	1.59	1.39	1.57	3.43	1.58	1.85	0.44	0.89	0.54	2.13
95th-Percentile Queue Length [ft]	39.79	34.83	39.33	85.66	39.41	46.17	10.99	22.30	13.39	53.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.85	4.42	4.60	28.65	3.97	4.20	28.28	25.23	25.23	26.50	28.32	28.32
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	6.23			6.76			26.19			27.94		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.09											
Intersection LOS	A											
Intersection V/C	0.324											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.645

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	67	832	259	118	717	133	118	395	45	200	459	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	832	259	118	717	133	118	395	45	200	459	80
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	208	65	30	179	33	30	99	11	50	115	20
Total Analysis Volume [veh/h]	67	832	259	118	717	133	118	395	45	200	459	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	24	0	10	23	10	10	23	0	13	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	24	24	7	25	35	7	20	11	23	23
g / C, Green / Cycle	0.08	0.35	0.35	0.10	0.36	0.49	0.10	0.29	0.15	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.04	0.23	0.16	0.07	0.20	0.08	0.07	0.23	0.11	0.15	0.15
s, saturation flow rate [veh/h]	1774	3547	1583	1774	3547	1583	1774	1903	1774	1863	1840
c, Capacity [veh/h]	151	1227	548	181	1288	733	182	545	268	625	617
d1, Uniform Delay [s]	30.46	19.57	17.91	30.22	17.79	11.03	30.21	23.19	28.41	18.09	18.10
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.06	3.03	2.91	3.90	1.74	0.12	3.88	3.02	4.09	0.48	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

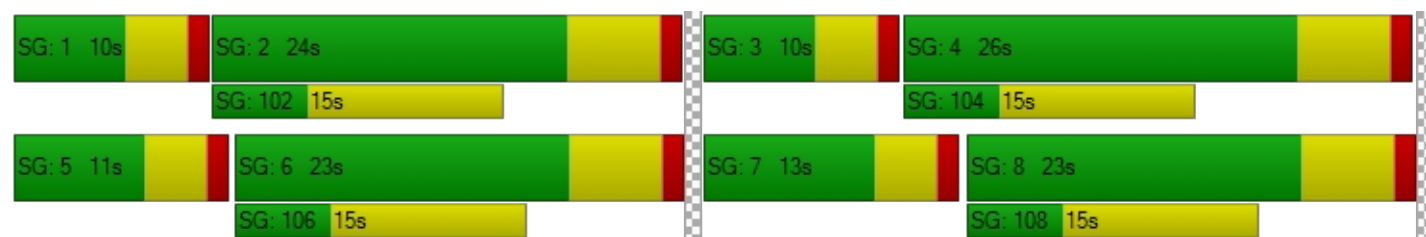
X, volume / capacity	0.45	0.68	0.47	0.65	0.56	0.18	0.65	0.81	0.74	0.43	0.43
d, Delay for Lane Group [s/veh]	32.52	22.60	20.82	34.13	19.53	11.15	34.09	26.20	32.50	18.57	18.59
Lane Group LOS	C	C	C	C	B	B	C	C	C	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.09	5.61	3.35	1.98	4.37	1.05	1.98	6.49	3.27	3.12	3.09
50th-Percentile Queue Length [ft]	27.34	140.32	83.67	49.55	109.21	26.36	49.51	162.21	81.81	77.98	77.33
95th-Percentile Queue Length [veh]	1.97	9.50	6.02	3.57	7.80	1.90	3.56	10.67	5.89	5.61	5.57
95th-Percentile Queue Length [ft]	49.21	237.45	150.61	89.18	194.90	47.45	89.11	266.65	147.26	140.36	139.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.52	22.60	20.82	34.13	19.53	11.15	34.09	26.20	26.20	32.50	18.58	18.59
Movement LOS	C	C	C	C	B	B	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	22.77			20.16			27.87			22.35		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	22.77											
Intersection LOS	C											
Intersection V/C	0.645											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.263

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵↶			↵			↵↶		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	14	287	0	0	212	156	146	0	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	287	0	0	212	156	146	0	17	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	72	0	0	53	39	37	0	4	0	0	0
Total Analysis Volume [veh/h]	14	287	0	0	212	156	146	0	17	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	21	0	18	29	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	14	14	14	14	14	8	37	2	31	31
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.24	0.14	0.62	0.04	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.01	0.17	0.00	0.13	0.11	0.09	0.01	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1048	1676	979	1676	1425	1597	1425	1597	1676	1676
c, Capacity [veh/h]	244	404	190	404	344	217	884	61	877	877
d1, Uniform Delay [s]	23.65	20.84	0.00	19.78	19.40	24.66	4.37	0.00	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	2.31	0.00	1.06	0.94	3.61	0.04	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.06	0.71	0.00	0.52	0.45	0.67	0.02	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	23.75	23.16	0.00	20.83	20.34	28.27	4.41	0.00	0.00	0.00
Lane Group LOS	C	C	A	C	C	C	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	0.17	3.48	0.00	2.38	1.72	2.00	0.06	0.00	0.00	0.00
50th-Percentile Queue Length [ft]	4.20	87.11	0.00	59.46	43.02	49.94	1.52	0.00	0.00	0.00
95th-Percentile Queue Length [veh]	0.30	6.27	0.00	4.28	3.10	3.60	0.11	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	7.55	156.80	0.00	107.04	77.44	89.89	2.74	0.00	0.00	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	23.75	23.16	23.16	0.00	20.83	20.34	28.27	4.41	4.41	0.00	0.00	0.00
Movement LOS	C	C	C	A	C	C	C	A	A	A	A	A
d_A, Approach Delay [s/veh]	23.18			20.62			25.79			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	22.56											
Intersection LOS	C											
Intersection V/C	0.263											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.366

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↑			↵ ↑ ↑			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	920.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	460	78	254	632	0	0	0	0	146	0	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	460	78	254	632	0	0	0	0	146	0	102
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	115	20	64	158	0	0	0	0	37	0	26
Total Analysis Volume [veh/h]	0	460	78	254	632	0	0	0	0	146	0	102
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	16	28	0	11	21	0	11	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	35	35	14	47	47	2	4	4	9	11	11
g / C, Green / Cycle	0.04	0.50	0.50	0.20	0.67	0.67	0.03	0.06	0.06	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.00	0.11	0.12	0.16	0.13	0.13	0.00	0.00	0.00	0.09	0.00	0.07
s, saturation flow rate [veh/h]	1597	3192	1557	1597	3192	1676	1597	1676	1744	1597	1676	1425
c, Capacity [veh/h]	60	1603	782	319	2121	1114	51	94	98	204	254	216
d1, Uniform Delay [s]	0.00	9.77	9.81	26.64	4.53	4.53	0.00	0.00	0.00	29.32	0.00	27.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.32	0.69	4.51	0.21	0.39	0.00	0.00	0.00	4.66	0.00	1.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

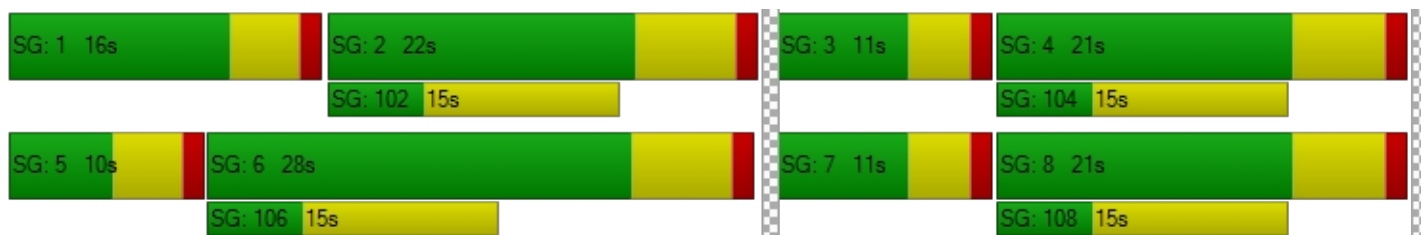
X, volume / capacity	0.00	0.22	0.23	0.80	0.20	0.20	0.00	0.00	0.00	0.72	0.00	0.47
d, Delay for Lane Group [s/veh]	0.00	10.09	10.49	31.15	4.74	4.92	0.00	0.00	0.00	33.99	0.00	28.76
Lane Group LOS	A	B	B	C	A	A	A	A	A	C	A	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.00	1.35	1.44	4.09	0.81	0.91	0.00	0.00	0.00	2.45	0.00	1.54
50th-Percentile Queue Length [ft]	0.00	33.70	35.88	102.27	20.35	22.82	0.00	0.00	0.00	61.34	0.00	38.59
95th-Percentile Queue Length [veh]	0.00	2.43	2.58	7.36	1.47	1.64	0.00	0.00	0.00	4.42	0.00	2.78
95th-Percentile Queue Length [ft]	0.00	60.65	64.58	184.09	36.64	41.08	0.00	0.00	0.00	110.41	0.00	69.46

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	10.18	10.49	31.15	4.80	4.92	0.00	0.00	0.00	33.99	14.38	28.76
Movement LOS	A	B	B	C	A	A	A	A	A	C	B	C
d_A, Approach Delay [s/veh]	10.23			12.35			0.00			31.84		
Approach LOS	B			B			A			C		
d_I, Intersection Delay [s/veh]	14.56											
Intersection LOS	B											
Intersection V/C	0.366											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.516

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	45	1118	172	18	817	63	59	204	46	71	82	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	1118	172	18	817	63	59	204	46	71	82	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	280	43	5	204	16	15	51	12	18	21	3
Total Analysis Volume [veh/h]	45	1118	172	18	817	63	59	204	46	71	82	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	18	29	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	32	32	4	30	30	19	19	19	19
g / C, Green / Cycle	0.08	0.53	0.53	0.06	0.50	0.50	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.03	0.35	0.12	0.01	0.26	0.04	0.05	0.12	0.03	0.15
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1169	1676	1425	1054
c, Capacity [veh/h]	129	1682	751	94	1611	719	256	527	448	418
d1, Uniform Delay [s]	26.09	10.34	7.64	26.89	9.89	7.70	24.68	16.05	14.57	17.40
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.61	2.09	0.71	0.98	1.14	0.24	0.45	0.46	0.10	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

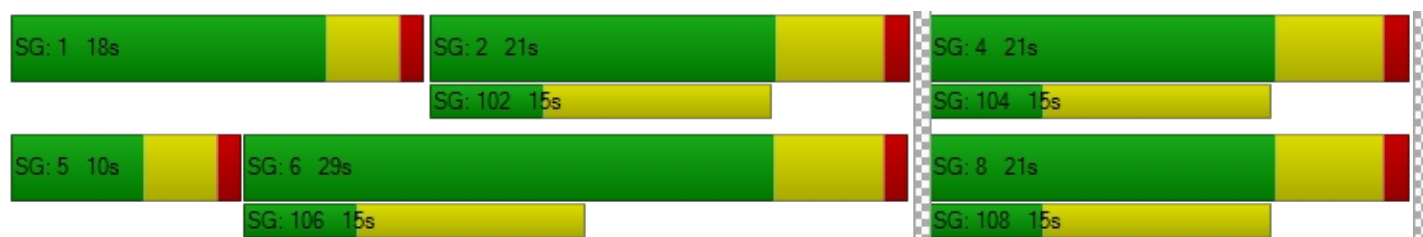
X, volume / capacity	0.35	0.66	0.23	0.19	0.51	0.09	0.23	0.39	0.10	0.39
d, Delay for Lane Group [s/veh]	27.70	12.43	8.35	27.87	11.03	7.94	25.13	16.52	14.67	17.99
Lane Group LOS	C	B	A	C	B	A	C	B	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.61	4.41	1.04	0.25	2.96	0.37	0.74	1.94	0.40	1.77
50th-Percentile Queue Length [ft]	15.31	110.37	26.02	6.26	74.11	9.33	18.48	48.56	9.90	44.18
95th-Percentile Queue Length [veh]	1.10	7.86	1.87	0.45	5.34	0.67	1.33	3.50	0.71	3.18
95th-Percentile Queue Length [ft]	27.56	196.51	46.84	11.27	133.39	16.79	33.26	87.40	17.82	79.53

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.70	12.43	8.35	27.87	11.03	7.94	25.13	16.52	14.67	17.99	17.99	17.99
Movement LOS	C	B	A	C	B	A	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	12.42			11.15			17.89			17.99		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	12.96											
Intersection LOS	B											
Intersection V/C	0.516											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type:	All-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	23	343	25	17	228	15	81	136	26	9	25	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	343	25	17	228	15	81	136	26	9	25	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	86	6	4	57	4	20	34	7	2	6	5
Total Analysis Volume [veh/h]	23	343	25	17	228	15	81	136	26	9	25	19
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	690	666	625	599
Degree of Utilization, x	0.57	0.39	0.39	0.09

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	3.58	1.86	1.84	0.29
95th-Percentile Queue Length [ft]	89.54	46.42	45.98	7.25
Approach Delay [s/veh]	14.82	11.84	12.39	9.60
Approach LOS	B	B	B	A
Intersection Delay [s/veh]	13.09			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	8.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.304

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	220.00	100.00	970.00	200.00	100.00	100.00	30.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	2	657	43	82	860	4	10	7	6	44	3	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	657	43	82	860	4	10	7	6	44	3	55
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	164	11	21	215	1	3	2	2	11	1	14
Total Analysis Volume [veh/h]	2	657	43	82	860	4	10	7	6	44	3	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	17	29	0	10	11	0	20	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	45	45	7	49	49	3	5	5	7	7
g / C, Green / Cycle	0.04	0.64	0.64	0.09	0.70	0.70	0.04	0.07	0.07	0.10	0.10
(v / s)_j Volume / Saturation Flow Rate	0.00	0.14	0.15	0.05	0.26	0.26	0.01	0.01	0.03	0.00	0.04
s, saturation flow rate [veh/h]	1597	3192	1625	1597	1676	1674	1597	1612	1597	1676	1425
c, Capacity [veh/h]	65	2050	1043	152	1168	1166	71	120	118	174	148
d1, Uniform Delay [s]	32.27	5.24	5.25	30.22	4.34	4.34	32.15	30.22	30.87	28.15	29.23
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.26	0.51	2.97	0.90	0.90	0.89	0.39	1.94	0.04	1.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

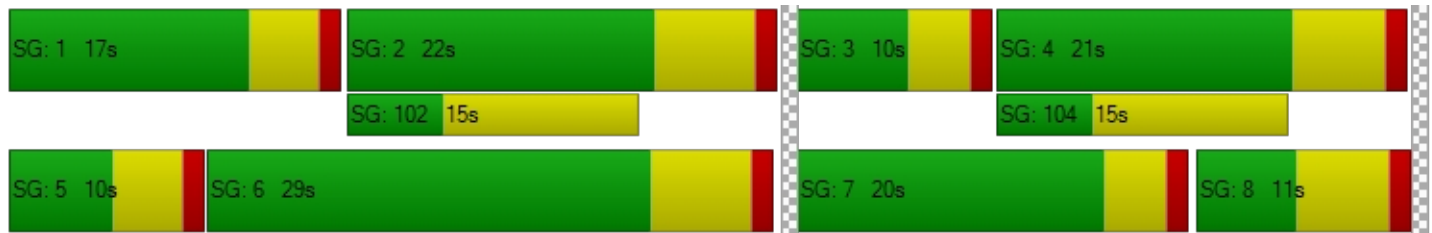
X, volume / capacity	0.03	0.23	0.23	0.54	0.37	0.37	0.14	0.11	0.37	0.02	0.37
d, Delay for Lane Group [s/veh]	32.46	5.50	5.76	33.19	5.24	5.24	33.04	30.61	32.81	28.19	30.78
Lane Group LOS	C	A	A	C	A	A	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.03	1.04	1.15	1.36	1.77	1.77	0.17	0.21	0.73	0.04	0.87
50th-Percentile Queue Length [ft]	0.85	26.11	28.65	33.97	44.24	44.18	4.28	5.13	18.20	1.11	21.75
95th-Percentile Queue Length [veh]	0.06	1.88	2.06	2.45	3.19	3.18	0.31	0.37	1.31	0.08	1.57
95th-Percentile Queue Length [ft]	1.54	47.00	51.57	61.14	79.64	79.53	7.70	9.24	32.76	1.99	39.15

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.46	5.57	5.76	33.19	5.24	5.24	33.04	30.61	30.61	32.81	28.19	30.78
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	5.66			7.66			31.67			31.58		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.56											
Intersection LOS	A											
Intersection V/C	0.304											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.543

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	185.00	100.00	50.00	165.00	100.00	165.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	84	1062	18	11	837	88	284	220	142	16	37	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	1062	18	11	837	88	284	220	142	16	37	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	266	5	3	209	22	71	55	36	4	9	1
Total Analysis Volume [veh/h]	84	1062	18	11	837	88	284	220	142	16	37	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	22	0	10	21	0	17	28	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	37	37	3	34	34	15	18	18	4	7
g / C, Green / Cycle	0.09	0.53	0.53	0.05	0.49	0.49	0.21	0.26	0.26	0.05	0.09
(v / s)_i Volume / Saturation Flow Rate	0.05	0.33	0.01	0.01	0.26	0.06	0.18	0.13	0.10	0.01	0.03
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1482	1597	1642
c, Capacity [veh/h]	142	1692	755	73	1553	694	342	434	384	81	157
d1, Uniform Delay [s]	30.65	11.58	7.82	32.09	12.50	9.83	26.28	22.13	21.27	31.84	29.38
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.84	1.77	0.06	0.94	1.34	0.38	5.20	0.92	0.59	1.16	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

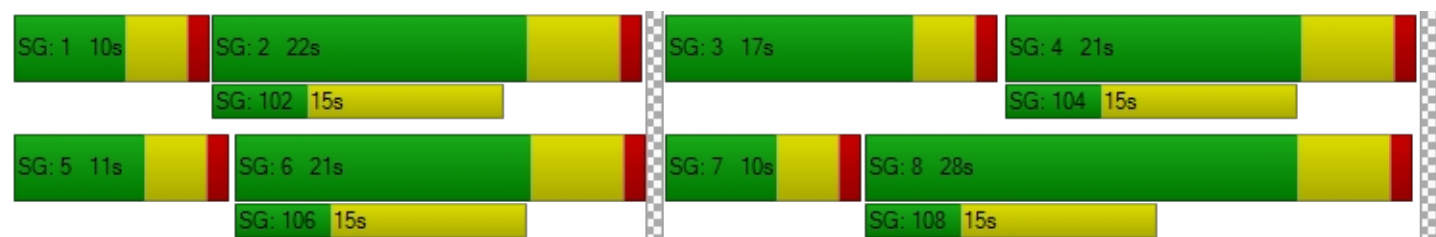
X, volume / capacity	0.59	0.63	0.02	0.15	0.54	0.13	0.83	0.51	0.37	0.20	0.27
d, Delay for Lane Group [s/veh]	34.49	13.35	7.88	33.04	13.85	10.21	31.48	23.05	21.86	33.00	30.29
Lane Group LOS	C	B	A	C	B	B	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.43	5.02	0.12	0.19	4.05	0.69	4.62	2.92	1.80	0.27	0.65
50th-Percentile Queue Length [ft]	35.67	125.39	2.94	4.69	101.23	17.35	115.47	72.93	45.10	6.77	16.35
95th-Percentile Queue Length [veh]	2.57	8.69	0.21	0.34	7.29	1.25	8.14	5.25	3.25	0.49	1.18
95th-Percentile Queue Length [ft]	64.20	217.21	5.29	8.45	182.22	31.24	203.58	131.28	81.18	12.18	29.44

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.49	13.35	7.88	33.04	13.85	10.21	31.48	23.05	21.86	33.00	30.29	30.29
Movement LOS	C	B	A	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	14.79			13.73			26.50			31.04		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.47											
Intersection LOS	B											
Intersection V/C	0.543											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	All-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.393

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	17	241	9	20	200	34	105	64	44	9	18	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	241	9	20	200	34	105	64	44	9	18	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	60	2	5	50	9	26	16	11	2	5	5
Total Analysis Volume [veh/h]	17	241	9	20	200	34	105	64	44	9	18	20
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	680	684	642	626
Degree of Utilization, x	0.39	0.37	0.33	0.08

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	1.87	1.72	1.45	0.24
95th-Percentile Queue Length [ft]	46.87	42.95	36.27	6.07
Approach Delay [s/veh]	11.69	11.34	11.37	9.22
Approach LOS	B	B	B	A
Intersection Delay [s/veh]	11.34			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.942

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	706	4	474	0	1366	521	225	1191	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	706	4	474	0	1366	521	225	1191	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	177	1	119	0	342	130	56	298	0	0	0	0
Total Analysis Volume [veh/h]	706	4	474	0	1366	521	225	1191	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	31	0	0	39	0	10	49	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	29	29	29	37	37	8	47
g / C, Green / Cycle	0.36	0.36	0.36	0.46	0.46	0.10	0.59
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.38	0.44	0.48	0.08	0.29
s, saturation flow rate [veh/h]	1416	1417	1264	2831	1297	2750	4050
c, Capacity [veh/h]	513	514	458	1309	600	275	2380
d1, Uniform Delay [s]	21.69	21.69	25.50	20.80	21.50	35.29	9.64
k, delay calibration	0.21	0.21	0.45	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	3.18	49.13	17.10	50.03	5.93	0.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

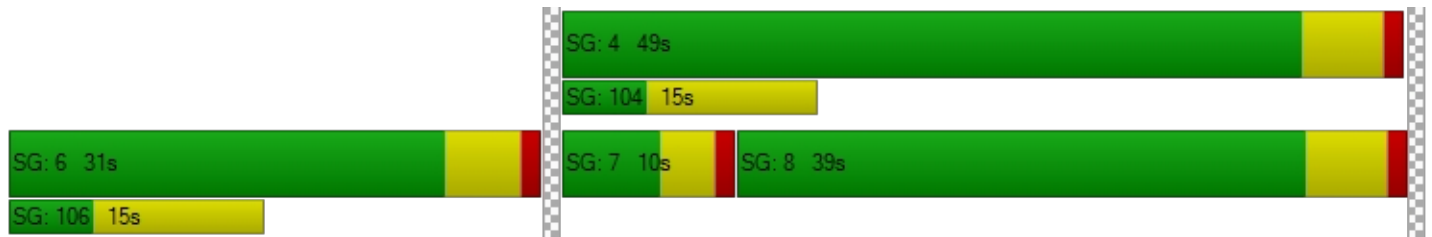
X, volume / capacity	0.69	0.69	1.03	0.96	1.05	0.82	0.50
d, Delay for Lane Group [s/veh]	24.88	24.87	74.63	37.89	71.53	41.22	10.40
Lane Group LOS	C	C	F	D	F	D	B
Critical Lane Group	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	5.58	5.58	14.04	12.85	17.95	2.27	3.44
50th-Percentile Queue Length [ft]	139.62	139.56	350.89	321.29	448.65	56.70	86.11
95th-Percentile Queue Length [veh]	9.46	9.46	20.63	18.73	25.76	4.08	6.20
95th-Percentile Queue Length [ft]	236.51	236.44	515.82	468.27	643.98	102.06	155.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.87	24.87	74.63	0.00	40.55	71.53	41.22	10.40	0.00	0.00	0.00	0.00
Movement LOS	C	C	F		D	E	D	B				
d_A, Approach Delay [s/veh]	44.79			49.10			15.29			0.00		
Approach LOS	D			D			B			A		
d_I, Intersection Delay [s/veh]	37.30											
Intersection LOS	D											
Intersection V/C	0.942											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	63.2
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.972

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave			Grand Ave		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave			Grand Ave		
Base Volume Input [veh/h]	372	108	189	83	0	423	295	1490	298	0	1372	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	372	108	189	83	0	423	295	1490	298	0	1372	36
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	27	47	21	0	106	74	373	75	0	343	9
Total Analysis Volume [veh/h]	372	108	189	83	0	423	295	1490	298	0	1372	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 5.00-00

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Permiss	Split	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	16	0	0	12	33	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No			No	No			No	
Maximum Recall		No		No			No	No			No	
Pedestrian Recall		No		No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	16	16	16	17	17	10	31	19	19
g / C, Green / Cycle	0.23	0.23	0.23	0.24	0.24	0.14	0.44	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.17	0.17	0.15	0.06	0.33	0.21	0.37	0.26	0.24
s, saturation flow rate [veh/h]	1416	1447	1264	1416	1264	1416	4050	4050	1461
c, Capacity [veh/h]	325	332	290	342	305	207	1797	1090	393
d1, Uniform Delay [s]	24.99	24.98	24.45	21.40	26.56	29.89	17.13	25.29	24.64
k, delay calibration	0.11	0.11	0.11	0.11	0.29	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	3.10	2.48	0.36	185.63	197.79	4.58	20.71	25.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

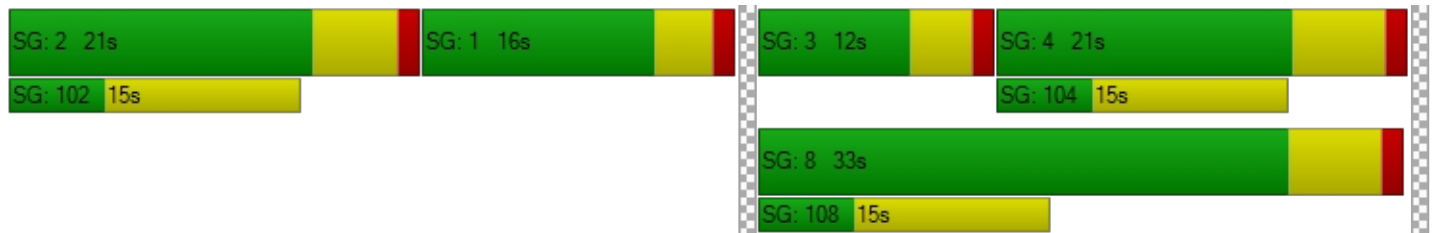
X, volume / capacity	0.73	0.73	0.65	0.24	1.39	1.43	0.83	0.97	0.90
d, Delay for Lane Group [s/veh]	28.19	28.07	26.93	21.77	212.19	227.68	21.71	46.01	50.10
Lane Group LOS	C	C	C	C	F	F	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	3.62	3.67	2.79	1.04	20.31	14.59	6.64	7.26	7.82
50th-Percentile Queue Length [ft]	90.44	91.87	69.72	26.01	507.81	364.65	166.11	181.53	195.42
95th-Percentile Queue Length [veh]	6.51	6.61	5.02	1.87	32.33	23.84	10.87	11.68	12.40
95th-Percentile Queue Length [ft]	162.79	165.37	125.49	46.82	808.29	595.92	271.80	292.01	310.05

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.15	28.07	26.93	21.77	0.00	212.19	227.68	21.71	0.00	0.00	46.95	50.10
Movement LOS	C	C	C	C		F	F	C			D	D
d_A, Approach Delay [s/veh]	27.79			180.96			55.75			47.03		
Approach LOS	C			F			E			D		
d_I, Intersection Delay [s/veh]	63.16											
Intersection LOS	E											
Intersection V/C	0.972											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	61	472	57	38	437	122	87	905	106	53	742	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	472	57	38	437	122	87	905	106	53	742	48
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	118	14	10	109	31	22	226	27	13	186	12
Total Analysis Volume [veh/h]	61	472	57	38	437	122	87	905	106	53	742	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	14	29	10	10	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	19	19	5	18	18	7	33	40	5	32	32
g / C, Green / Cycle	0.08	0.27	0.27	0.07	0.26	0.26	0.09	0.47	0.58	0.08	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.05	0.03	0.19	0.20	0.06	0.32	0.05	0.04	0.27	0.27
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1377	1416	2831	2237	1416	1487	1455
c, Capacity [veh/h]	116	765	341	99	384	355	134	1322	1222	111	671	657
d1, Uniform Delay [s]	30.82	22.38	19.53	31.10	23.90	23.97	30.59	14.62	7.57	30.87	14.41	14.41
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.63	0.82	0.23	2.40	2.99	3.37	5.25	2.89	0.03	3.14	3.86	3.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

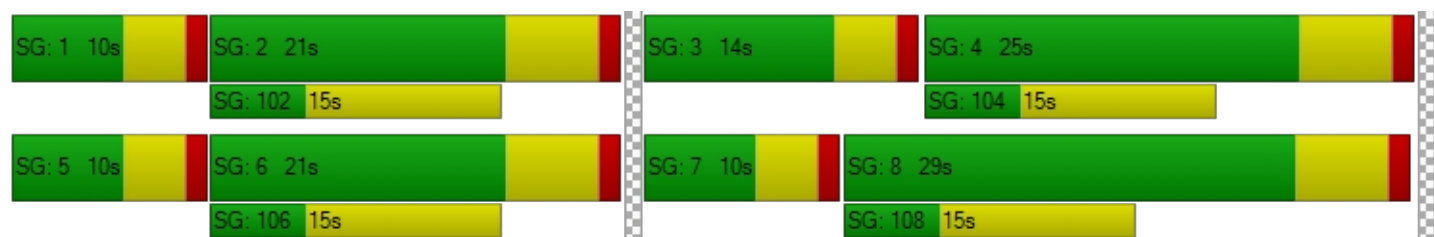
X, volume / capacity	0.52	0.62	0.17	0.38	0.75	0.76	0.65	0.68	0.09	0.48	0.60	0.60
d, Delay for Lane Group [s/veh]	34.45	23.20	19.76	33.50	26.90	27.34	35.84	17.51	7.60	34.02	18.27	18.36
Lane Group LOS	C	C	B	C	C	C	D	B	A	C	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.04	3.16	0.67	0.64	4.29	4.06	1.52	5.19	0.31	0.90	4.71	4.62
50th-Percentile Queue Length [ft]	26.07	78.99	16.73	16.06	107.25	101.54	37.99	129.80	7.75	22.51	117.66	115.60
95th-Percentile Queue Length [veh]	1.88	5.69	1.20	1.16	7.69	7.31	2.74	8.93	0.56	1.62	8.26	8.15
95th-Percentile Queue Length [ft]	46.93	142.19	30.12	28.91	192.17	182.76	68.39	223.22	13.94	40.52	206.60	203.77

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.45	23.20	19.76	33.50	27.05	27.34	35.84	17.51	7.60	34.02	18.31	18.36
Movement LOS	C	C	B	C	C	C	D	B	A	C	B	B
d_A, Approach Delay [s/veh]	24.03			27.52			18.00			19.30		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	21.31											
Intersection LOS	C											
Intersection V/C	0.596											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	70	844	366	81	708	152	242	680	103	241	454	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	844	366	81	708	152	242	680	103	241	454	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	211	92	20	177	38	61	170	26	60	114	18
Total Analysis Volume [veh/h]	70	844	366	81	708	152	242	680	103	241	454	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	23	0	10	23	0	16	27	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	23	23	6	23	23	14	25	25	8	19	19
g / C, Green / Cycle	0.08	0.33	0.33	0.09	0.33	0.33	0.20	0.36	0.36	0.12	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.05	0.30	0.29	0.06	0.25	0.12	0.17	0.27	0.27	0.09	0.16	0.06
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1419	2750	2831	1264
c, Capacity [veh/h]	120	921	411	125	931	416	287	528	504	322	763	341
d1, Uniform Delay [s]	30.85	22.70	22.43	30.87	21.03	17.92	26.84	19.92	19.92	29.90	22.24	19.79
k, delay calibration	0.11	0.11	0.21	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.45	4.17	12.12	5.56	1.31	0.54	6.65	9.83	10.26	3.48	3.40	1.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

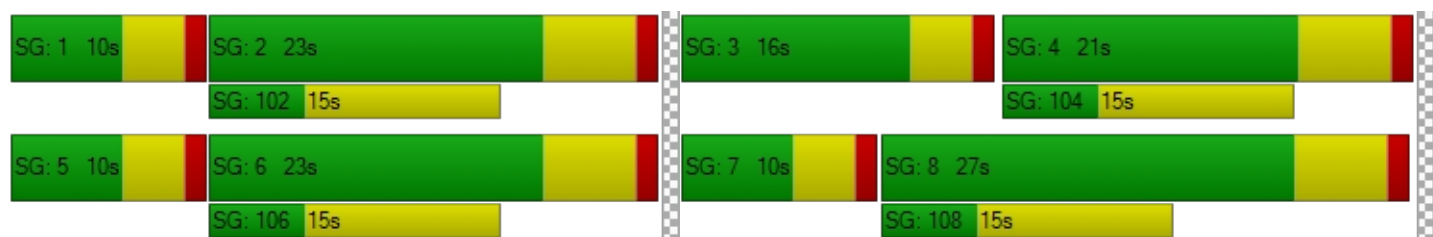
X, volume / capacity	0.58	0.92	0.89	0.65	0.76	0.37	0.84	0.76	0.76	0.75	0.59	0.21
d, Delay for Lane Group [s/veh]	35.30	26.87	34.55	36.42	22.34	18.46	33.49	29.75	30.18	33.38	25.64	21.17
Lane Group LOS	D	C	C	D	C	B	C	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.21	6.41	6.42	1.43	4.75	1.74	4.09	6.48	6.25	1.98	3.29	0.95
50th-Percentile Queue Length [ft]	30.33	160.24	160.49	35.73	118.77	43.48	102.16	161.98	156.17	49.62	82.37	23.69
95th-Percentile Queue Length [veh]	2.18	10.56	10.57	2.57	8.33	3.13	7.36	10.65	10.35	3.57	5.93	1.71
95th-Percentile Queue Length [ft]	54.59	264.04	264.37	64.32	208.13	78.26	183.90	266.34	258.64	89.31	148.27	42.64

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	35.30	26.87	34.55	36.42	22.34	18.46	33.49	29.93	30.18	33.38	25.64	21.17
Movement LOS	D	C	C	D	C	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	29.53			22.92			30.79			27.66		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	27.95											
Intersection LOS	C											
Intersection V/C	0.712											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.346

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵			↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	180.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	28	74	30	85	97	108	137	901	37	24	386	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	74	30	85	97	108	137	901	37	24	386	50
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	19	8	21	24	27	34	225	9	6	97	13
Total Analysis Volume [veh/h]	28	74	30	85	97	108	137	901	37	24	386	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	18	29	0	10	21	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	9	9	6	11	11	9	43	43	4	38	38
g / C, Green / Cycle	0.06	0.12	0.12	0.09	0.15	0.15	0.13	0.61	0.61	0.06	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.02	0.06	0.07	0.09	0.10	0.22	0.22	0.02	0.14	0.04
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1457	1416	2831	1264
c, Capacity [veh/h]	88	183	156	130	228	194	190	1733	892	83	1519	678
d1, Uniform Delay [s]	31.43	28.30	27.55	30.72	26.85	27.44	29.05	6.74	6.74	31.56	8.70	7.83
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.07	1.43	0.59	5.49	1.26	2.50	5.10	0.58	1.12	1.90	0.40	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.32	0.40	0.19	0.65	0.43	0.56	0.72	0.36	0.36	0.29	0.25	0.07
d, Delay for Lane Group [s/veh]	33.50	29.73	28.14	36.21	28.11	29.94	34.15	7.31	7.86	33.46	9.11	8.04
Lane Group LOS	C	C	C	D	C	C	C	A	A	C	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.48	1.14	0.45	1.49	1.44	1.69	2.32	1.80	1.99	0.41	1.35	0.33
50th-Percentile Queue Length [ft]	11.91	28.52	11.18	37.35	36.07	42.15	57.90	44.91	49.67	10.23	33.76	8.36
95th-Percentile Queue Length [veh]	0.86	2.05	0.80	2.69	2.60	3.03	4.17	3.23	3.58	0.74	2.43	0.60
95th-Percentile Queue Length [ft]	21.43	51.33	20.12	67.23	64.93	75.87	104.22	80.83	89.40	18.42	60.76	15.05

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.50	29.73	28.14	36.21	28.11	29.94	34.15	7.49	7.86	33.46	9.11	8.04
Movement LOS	C	C	C	D	C	C	C	A	A	C	A	A
d_A, Approach Delay [s/veh]	30.17			31.16			10.90			10.26		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.05											
Intersection LOS	B											
Intersection V/C	0.346											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.554

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	99	902	55	61	865	111	216	371	159	34	172	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	902	55	61	865	111	216	371	159	34	172	36
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	226	14	15	216	28	54	93	40	9	43	9
Total Analysis Volume [veh/h]	99	902	55	61	865	111	216	371	159	34	172	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	14	29	0	10	25	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	30	30	5	29	29	19	19	19	19	19
g / C, Green / Cycle	0.11	0.49	0.49	0.09	0.48	0.48	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.04	0.04	0.27	0.08	0.21	0.22	0.11	0.04	0.13
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1052	1676	1425	906	1627
c, Capacity [veh/h]	171	1571	701	146	1520	679	331	531	451	216	515
d1, Uniform Delay [s]	25.51	10.79	8.05	25.76	11.28	8.92	24.15	17.99	15.77	24.92	16.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.09	1.53	0.22	1.91	1.55	0.52	2.19	1.68	0.47	0.34	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.58	0.57	0.08	0.42	0.57	0.16	0.65	0.70	0.35	0.16	0.40
d, Delay for Lane Group [s/veh]	28.59	12.32	8.27	27.67	12.83	9.44	26.33	19.67	16.24	25.26	16.57
Lane Group LOS	C	B	A	C	B	A	C	B	B	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.37	3.55	0.34	0.83	3.51	0.74	2.92	4.08	1.50	0.43	1.99
50th-Percentile Queue Length [ft]	34.19	88.76	8.38	20.67	87.75	18.59	72.92	102.09	37.49	10.72	49.83
95th-Percentile Queue Length [veh]	2.46	6.39	0.60	1.49	6.32	1.34	5.25	7.35	2.70	0.77	3.59
95th-Percentile Queue Length [ft]	61.55	159.76	15.08	37.21	157.96	33.45	131.26	183.76	67.48	19.29	89.69

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.59	12.32	8.27	27.67	12.83	9.44	26.33	19.67	16.24	25.26	16.57	16.57
Movement LOS	C	B	A	C	B	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	13.63			13.34			20.87			17.79		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	15.61											
Intersection LOS	B											
Intersection V/C	0.554											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	All-way stop	Delay (sec / veh):	21.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.813

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	12	177	52	61	173	33	48	401	17	28	189	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	177	52	61	173	33	48	401	17	28	189	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	44	13	15	43	8	12	100	4	7	47	4
Total Analysis Volume [veh/h]	12	177	52	61	173	33	48	401	17	28	189	17
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	525	525	573	529
Degree of Utilization, x	0.46	0.51	0.81	0.44

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	2.38	2.85	8.12	2.24
95th-Percentile Queue Length [ft]	59.56	71.36	202.94	56.07
Approach Delay [s/veh]	15.53	16.75	30.97	15.09
Approach LOS	C	C	D	C
Intersection Delay [s/veh]	21.67			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.462

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	2	0	2	2	0	0
Pocket Length [ft]	500.00	100.00	280.00	320.00	100.00	75.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	43	544	164	36	812	52	97	314	115	256	145	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	-164	0	0	0	0	0	-115	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	544	0	36	812	52	97	314	0	256	145	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	136	0	9	203	13	24	79	0	64	36	9
Total Analysis Volume [veh/h]	43	544	0	36	812	52	97	314	0	256	145	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	23	0	15	22	0	10	21	16	11	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	37	37	5	36	36	6	12	12	9	14	14
g / C, Green / Cycle	0.08	0.52	0.52	0.07	0.52	0.52	0.09	0.17	0.17	0.12	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.03	0.17	0.00	0.02	0.25	0.04	0.03	0.10	0.00	0.08	0.09	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	3101	3192	1482	3101	1676	1425
c, Capacity [veh/h]	125	1665	743	118	1651	737	286	529	246	385	332	282
d1, Uniform Delay [s]	30.54	9.65	0.00	30.71	10.94	8.47	29.78	27.02	0.00	29.26	24.66	23.09
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.61	0.52	0.00	1.44	1.05	0.19	0.70	1.07	0.00	1.97	0.91	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.34	0.33	0.00	0.30	0.49	0.07	0.34	0.59	0.00	0.66	0.44	0.12
d, Delay for Lane Group [s/veh]	32.15	10.17	0.00	32.14	11.99	8.65	30.47	28.08	0.00	31.23	25.57	23.29
Lane Group LOS	C	B	A	C	B	A	C	C	A	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.69	2.00	0.00	0.58	3.40	0.35	0.73	2.28	0.00	1.98	1.99	0.45
50th-Percentile Queue Length [ft]	17.27	49.92	0.00	14.48	85.11	8.79	18.33	57.07	0.00	49.60	49.85	11.18
95th-Percentile Queue Length [veh]	1.24	3.59	0.00	1.04	6.13	0.63	1.32	4.11	0.00	3.57	3.59	0.80
95th-Percentile Queue Length [ft]	31.08	89.86	0.00	26.07	153.20	15.82	32.99	102.73	0.00	89.29	89.74	20.12

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.15	10.17	0.00	32.14	11.99	8.65	30.47	28.08	0.00	31.23	25.57	23.29
Movement LOS	C	B	A	C	B	A	C	C	A	C	C	C
d_A, Approach Delay [s/veh]	11.78			12.61			28.65			28.71		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.23											
Intersection LOS	B											
Intersection V/C	0.462											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	33.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	70	241	141	281	374	39	28	355	179	296	295	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	241	141	281	374	39	28	355	179	296	295	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	60	35	70	94	10	7	89	45	74	74	18
Total Analysis Volume [veh/h]	70	241	141	281	374	39	28	355	179	296	295	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	15	27	0	10	17	0	16	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	20	13	27	4	15	15	14	25	25
g / C, Green / Cycle	0.09	0.29	0.19	0.39	0.06	0.21	0.21	0.20	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.18	0.25	0.02	0.21	0.13	0.19	0.18	0.05
s, saturation flow rate [veh/h]	1597	1574	1597	1649	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	136	450	297	636	101	359	305	319	589	500
d1, Uniform Delay [s]	30.61	23.58	28.16	17.61	31.27	27.41	24.71	27.50	17.88	15.50
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.96	17.87	14.64	5.07	1.48	19.44	1.79	11.46	0.66	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.51	0.85	0.95	0.65	0.28	0.99	0.59	0.93	0.50	0.14
d, Delay for Lane Group [s/veh]	33.58	41.45	42.81	22.67	32.75	46.86	26.50	38.96	18.54	15.63
Lane Group LOS	C	D	D	C	C	D	C	D	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.17	7.55	5.47	5.63	0.47	7.32	2.60	5.46	3.42	0.71
50th-Percentile Queue Length [ft]	29.26	188.87	136.68	140.76	11.65	182.94	64.90	136.40	85.59	17.75
95th-Percentile Queue Length [veh]	2.11	12.06	9.30	9.52	0.84	11.75	4.67	9.29	6.16	1.28
95th-Percentile Queue Length [ft]	52.67	301.56	232.55	238.04	20.97	293.85	116.82	232.17	154.07	31.95

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.58	41.45	41.45	42.81	22.67	22.67	32.75	46.86	26.50	38.96	18.54	15.63
Movement LOS	C	D	D	D	C	C	C	D	C	D	B	B
d_A, Approach Delay [s/veh]	40.23			30.82			39.67			27.36		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	33.75											
Intersection LOS	C											
Intersection V/C	0.816											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	9.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.413

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵↵		↑↑↑		↑↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	318	500	0	495	198	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	500	0	495	198	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	125	0	124	50	0
Total Analysis Volume [veh/h]	318	500	0	495	198	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.4	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	49	0	0	17	11	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	0.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	25	25	0	31
g / C, Green / Cycle	0.42	0.42	0.00	0.51
(v / s)_i Volume / Saturation Flow Rate	0.20	0.35	0.11	0.06
s, saturation flow rate [veh/h]	1571	1425	4567	3192
c, Capacity [veh/h]	779	606	0	1622
d1, Uniform Delay [s]	12.67	15.27	0.00	7.74
k, delay calibration	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.34	2.92	0.00	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.41	0.83	0.00	0.12
d, Delay for Lane Group [s/veh]	13.01	18.18	0.00	7.89
Lane Group LOS	B	B	A	A
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	1.39	5.66	0.00	0.59
50th-Percentile Queue Length [ft]	34.87	141.61	0.00	14.84
95th-Percentile Queue Length [veh]	2.51	9.57	0.00	1.07
95th-Percentile Queue Length [ft]	62.76	239.19	0.00	26.71

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.01	18.18	0.00	0.00	7.89	0.00
Movement LOS	B	B		A	A	
d_A, Approach Delay [s/veh]	16.17		0.00		7.89	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	9.79					
Intersection LOS	A					
Intersection V/C	0.413					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	4.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.068

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	95	81	468	380	241	272
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	81	468	380	241	272
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	20	117	95	60	68
Total Analysis Volume [veh/h]	95	81	468	380	241	272
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	35	0	25	35	0	25
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	8	8	8	48	58	48	48
g / C, Green / Cycle	0.14	0.14	0.14	0.79	0.97	0.79	0.79
(v / s)_i Volume / Saturation Flow Rate	0.04	0.04	0.04	0.10	0.27	0.15	0.06
s, saturation flow rate [veh/h]	1597	1520	1425	4567	1425	1610	4567
c, Capacity [veh/h]	229	218	204	3608	1287	1305	3608
d1, Uniform Delay [s]	22.89	22.91	22.93	1.47	0.38	2.46	1.40
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.61	0.66	0.73	0.07	0.13	0.31	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

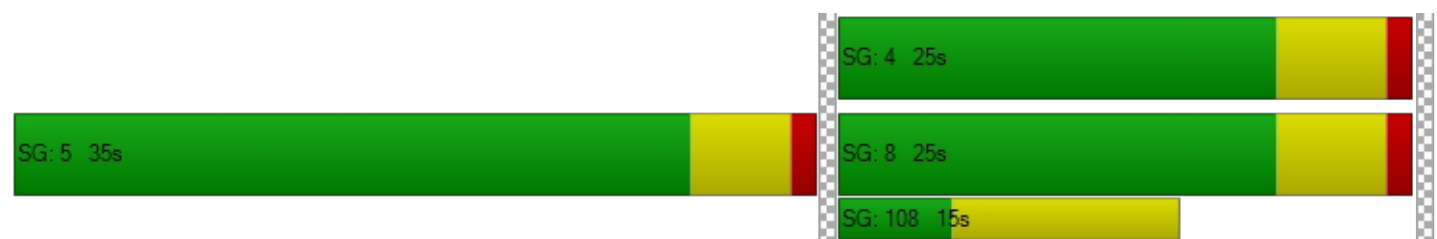
X, volume / capacity	0.27	0.27	0.28	0.13	0.30	0.18	0.08
d, Delay for Lane Group [s/veh]	23.51	23.57	23.66	1.55	0.51	2.78	1.45
Lane Group LOS	C	C	C	A	A	A	A
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.76	0.74	0.71	0.13	0.05	0.27	0.07
50th-Percentile Queue Length [ft]	18.97	18.48	17.84	3.17	1.13	6.70	1.75
95th-Percentile Queue Length [veh]	1.37	1.33	1.28	0.23	0.08	0.48	0.13
95th-Percentile Queue Length [ft]	34.15	33.26	32.11	5.71	2.04	12.07	3.16

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	23.53	23.64	1.55	0.51	2.78	1.45
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	23.58		1.08		2.07	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.99					
Intersection LOS	A					
Intersection V/C	0.068					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.505

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	75.00	140.00	100.00	70.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	98	980	8	15	1018	49	46	42	185	0	6	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	98	980	8	15	1018	49	46	42	185	0	6	8
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	245	2	4	255	12	12	11	46	0	2	2
Total Analysis Volume [veh/h]	98	980	8	15	1018	49	46	42	185	0	6	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	29	0	10	21	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	39	39	3	36	36	12	12	12	12	12
g / C, Green / Cycle	0.10	0.64	0.64	0.06	0.60	0.60	0.20	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.06	0.31	0.01	0.01	0.32	0.03	0.04	0.03	0.12	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1255	1676	1482	1223	1523
c, Capacity [veh/h]	168	2057	918	89	1899	848	343	335	296	322	304
d1, Uniform Delay [s]	25.60	5.48	3.82	27.00	7.22	5.09	21.04	19.70	21.94	0.00	19.38
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	0.79	0.02	0.88	1.09	0.13	0.18	0.17	2.15	0.00	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

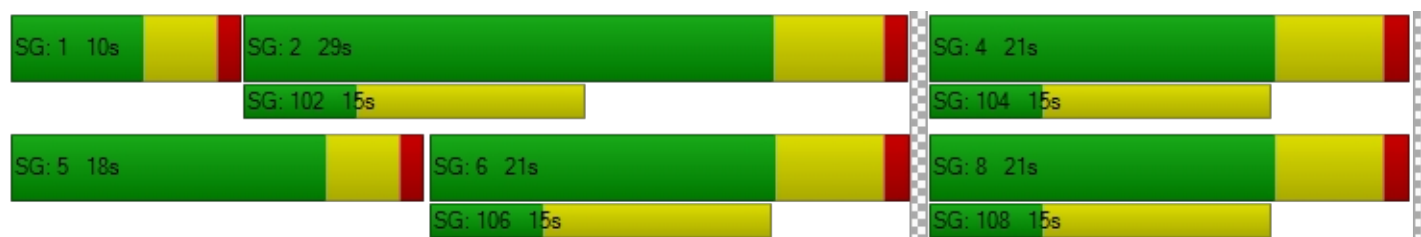
X, volume / capacity	0.58	0.48	0.01	0.17	0.54	0.06	0.13	0.13	0.62	0.00	0.05
d, Delay for Lane Group [s/veh]	28.81	6.27	3.83	27.89	8.31	5.22	21.21	19.86	24.10	0.00	19.44
Lane Group LOS	C	A	A	C	A	A	C	B	C	A	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.41	2.37	0.03	0.21	2.83	0.20	0.51	0.45	2.29	0.00	0.15
50th-Percentile Queue Length [ft]	35.17	59.32	0.72	5.24	70.66	5.08	12.79	11.16	57.28	0.00	3.66
95th-Percentile Queue Length [veh]	2.53	4.27	0.05	0.38	5.09	0.37	0.92	0.80	4.12	0.00	0.26
95th-Percentile Queue Length [ft]	63.31	106.77	1.30	9.44	127.18	9.14	23.02	20.08	103.10	0.00	6.59

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.81	6.27	3.83	27.89	8.31	5.22	21.21	19.86	24.10	0.00	19.44	19.44
Movement LOS	C	A	A	C	A	A	C	B	C	A	B	B
d_A, Approach Delay [s/veh]	8.29			8.44			22.96			19.44		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	10.05											
Intersection LOS	B											
Intersection V/C	0.505											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	2	208	0	3	197	8	27	0	21	1	3	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	208	0	3	197	8	27	0	21	1	3	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	52	0	1	49	2	7	0	5	0	1	1
Total Analysis Volume [veh/h]	2	208	0	3	197	8	27	0	21	1	3	5
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.03	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	7.64	0.00	0.00	7.65	0.00	0.00	12.21	12.35	9.75	11.99	11.99	9.40
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh]	0.54	0.54	0.54	0.54	0.54	0.54	0.24	0.24	0.24	0.04	0.04	0.04
95th-Percentile Queue Length [ft]	13.57	13.57	13.57	13.46	13.46	13.46	6.11	6.11	6.11	1.04	1.04	1.04
d_A, Approach Delay [s/veh]	0.07			0.11			11.13			10.55		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.41											
Intersection LOS	B											



**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	All-way stop	Delay (sec / veh):	7.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

**Intersection Setup**

Name	Eucalyptus Ave					
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↵		↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Eucalyptus Ave					
Base Volume Input [veh/h]	9	0	1	6	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	0	1	6	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	0	2	0	0
Total Analysis Volume [veh/h]	9	0	1	6	0	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	865	859	863
Degree of Utilization, x	0.01	0.01	0.00

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.03	0.02	0.00
95th-Percentile Queue Length [ft]	0.79	0.62	0.00
Approach Delay [s/veh]	7.21	7.23	0.00
Approach LOS	A	A	A
Intersection Delay [s/veh]	7.21		
Intersection LOS	A		

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**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type: Signalized  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 13.7  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.637

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	1	1045	159	239	851	1	17	37	7	116	1	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1045	159	239	851	1	17	37	7	116	1	101
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	261	40	60	213	0	4	9	2	29	0	25
Total Analysis Volume [veh/h]	1	1045	159	239	851	1	17	37	7	116	1	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	17	24	0	14	21	0	0	22	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	2	29	29	12	38	38	14	14
g / C, Green / Cycle	0.04	0.48	0.48	0.19	0.63	0.63	0.23	0.23
(v / s)_j Volume / Saturation Flow Rate	0.00	0.33	0.11	0.15	0.25	0.25	0.04	0.16
s, saturation flow rate [veh/h]	1597	3192	1425	1597	1676	1676	1578	1361
c, Capacity [veh/h]	63	1520	678	308	1055	1054	442	406
d1, Uniform Delay [s]	27.68	12.24	9.27	22.99	5.53	5.53	18.39	20.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	2.56	0.81	4.21	1.15	1.15	0.14	1.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

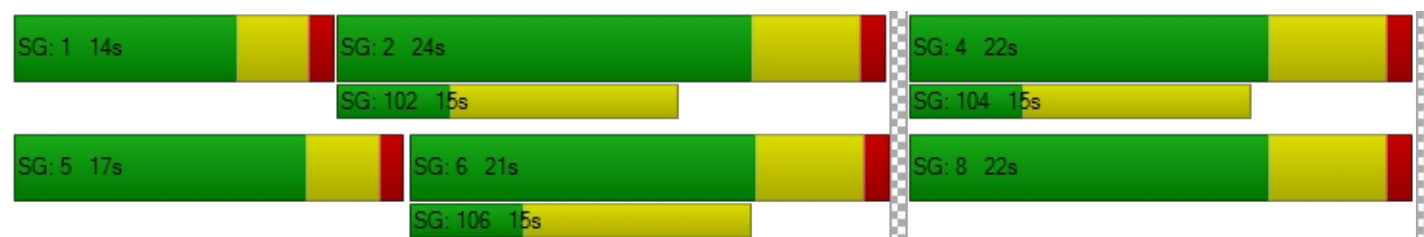
X, volume / capacity	0.02	0.69	0.23	0.78	0.40	0.40	0.14	0.54
d, Delay for Lane Group [s/veh]	27.78	14.80	10.08	27.20	6.68	6.68	18.53	21.97
Lane Group LOS	C	B	B	C	A	A	B	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.01	4.72	1.12	3.20	1.95	1.95	0.62	2.69
50th-Percentile Queue Length [ft]	0.36	118.03	27.90	80.09	48.66	48.65	15.44	67.13
95th-Percentile Queue Length [veh]	0.03	8.28	2.01	5.77	3.50	3.50	1.11	4.83
95th-Percentile Queue Length [ft]	0.65	207.11	50.21	144.16	87.60	87.57	27.79	120.84

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.78	14.80	10.08	27.20	6.68	6.68	18.53	18.53	18.53	21.97	21.97	21.97
Movement LOS	C	B	B	C	A	A	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	14.19			11.18			18.53			21.97		
Approach LOS	B			B			B			C		
d_I, Intersection Delay [s/veh]	13.68											
Intersection LOS	B											
Intersection V/C	0.637											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type: All-way stop  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 13.1  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.620

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merrill Ave Eastbound			Merrill Ave Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave Southbound			Merrill Ave Eastbound			Merrill Ave Westbound		
Base Volume Input [veh/h]	0	0	0	145	0	75	106	350	0	0	100	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	145	0	75	106	350	0	0	100	96
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	36	0	19	27	88	0	0	25	24
Total Analysis Volume [veh/h]	0	0	0	145	0	75	106	350	0	0	100	96
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	579	660	736	736
Degree of Utilization, x	0.00	0.33	0.62	0.27

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.00	1.46	4.35	1.07
95th-Percentile Queue Length [ft]	0.00	36.52	108.66	26.79
Approach Delay [s/veh]	0.00	11.16	15.52	9.66
Approach LOS	A	B	C	A
Intersection Delay [s/veh]	13.10			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Two-way stop	Delay (sec / veh):	16.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.074

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	25	1	15	6	1	0	2	552	8	1	165	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	1	15	6	1	0	2	552	8	1	165	4
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	4	2	0	0	1	138	2	0	41	1
Total Analysis Volume [veh/h]	25	1	15	6	1	0	2	552	8	1	165	4
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.07	0.00	0.03	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	16.78	16.44	12.87	16.38	15.62	9.35	7.56	0.00	0.00	8.56	0.00	0.00
Movement LOS	C	C	B	C	C	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.35	0.35	0.35	0.07	0.07	0.07	1.96	1.96	1.96	0.60	0.60	0.60
95th-Percentile Queue Length [ft]	8.77	8.77	8.77	1.64	1.64	1.64	48.89	48.89	48.89	15.07	15.07	15.07
d_A, Approach Delay [s/veh]	15.35			16.27			0.03			0.05		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	0.98											
Intersection LOS	C											

**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	70.00	100.00	70.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	75	549	27	48	945	84	207	28	344	36	4	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	549	27	48	945	84	207	28	344	36	4	22
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	137	7	12	236	21	52	7	86	9	1	6
Total Analysis Volume [veh/h]	75	549	27	48	945	84	207	28	344	36	4	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	25	0	10	19	0	14	16	0	19	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	31	31	6	30	30	12	21	21	5	14	14
g / C, Green / Cycle	0.09	0.44	0.44	0.08	0.43	0.43	0.17	0.30	0.30	0.07	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.05	0.17	0.02	0.02	0.31	0.31	0.13	0.02	0.24	0.02	0.00	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	3101	1676	1629	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	150	1394	623	251	711	691	267	499	424	112	336	286
d1, Uniform Delay [s]	30.17	13.41	11.31	30.02	16.85	16.85	27.88	17.55	22.75	30.96	22.43	22.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.13	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.59	0.84	0.13	0.37	6.61	6.80	4.77	0.05	4.49	1.64	0.01	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.50	0.39	0.04	0.19	0.73	0.73	0.77	0.06	0.81	0.32	0.01	0.08
d, Delay for Lane Group [s/veh]	32.76	14.24	11.45	30.39	23.46	23.65	32.65	17.60	27.25	32.60	22.44	22.84
Lane Group LOS	C	B	B	C	C	C	C	B	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.23	2.68	0.23	0.37	7.24	7.07	3.41	0.30	5.20	0.59	0.05	0.28
50th-Percentile Queue Length [ft]	30.83	67.03	5.80	9.18	181.03	176.87	85.28	7.49	129.99	14.87	1.26	7.05
95th-Percentile Queue Length [veh]	2.22	4.83	0.42	0.66	11.65	11.44	6.14	0.54	8.94	1.07	0.09	0.51
95th-Percentile Queue Length [ft]	55.49	120.65	10.43	16.52	291.36	285.93	153.50	13.49	223.48	26.77	2.26	12.69

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.76	14.24	11.45	30.39	23.54	23.65	32.65	17.60	27.25	32.60	22.44	22.84
Movement LOS	C	B	B	C	C	C	C	B	C	C	C	C
d_A, Approach Delay [s/veh]	16.26			23.86			28.71			28.48		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	23.08											
Intersection LOS	C											
Intersection V/C	0.622											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.670

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↔		↔↓		↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	350.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	399	272	562	757	246	258
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	399	272	562	757	246	258
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	68	141	189	62	65
Total Analysis Volume [veh/h]	399	272	562	757	246	258
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	2	7	1	6	7	1
Auxiliary Signal Groups		2,7				1
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	5.2	4.8	3.6	5.2	4.8	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	22	21	27	49	21	27
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	25	41	25	52	14	25
g / C, Green / Cycle	0.35	0.59	0.35	0.74	0.21	0.35
(v / s)_i Volume / Saturation Flow Rate	0.21	0.17	0.32	0.41	0.14	0.16
s, saturation flow rate [veh/h]	1863	1583	1774	1863	1774	1583
c, Capacity [veh/h]	658	847	627	1369	368	559
d1, Uniform Delay [s]	18.63	9.13	21.42	4.14	25.51	17.49
k, delay calibration	0.50	0.50	0.26	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.12	1.00	10.53	1.61	2.09	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

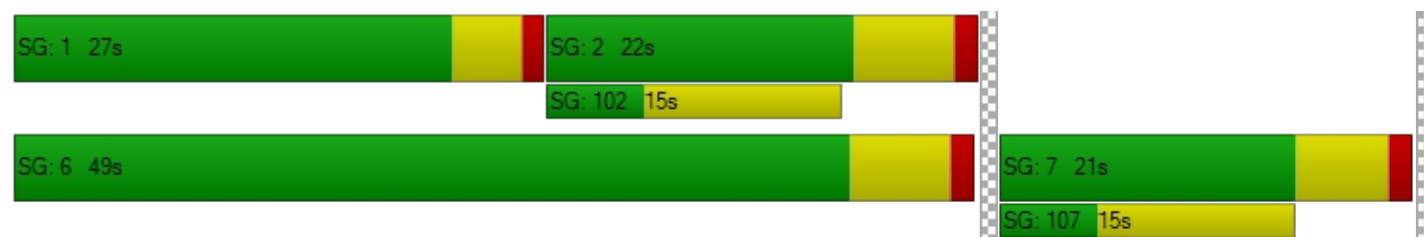
X, volume / capacity	0.61	0.32	0.90	0.55	0.67	0.46
d, Delay for Lane Group [s/veh]	22.75	10.13	31.96	5.75	27.60	18.08
Lane Group LOS	C	B	C	A	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	5.20	1.96	9.06	2.31	3.67	2.94
50th-Percentile Queue Length [ft]	129.99	48.94	226.45	57.82	91.69	73.48
95th-Percentile Queue Length [veh]	8.94	3.52	13.99	4.16	6.60	5.29
95th-Percentile Queue Length [ft]	223.48	88.09	349.84	104.07	165.04	132.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	22.75	10.13	31.96	5.75	27.60	18.08
Movement LOS	C	B	C	A	C	B
d_A, Approach Delay [s/veh]	17.63		16.91		22.73	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	18.28					
Intersection LOS	B					
Intersection V/C	0.670					

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	23.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.547

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	0
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	180	464	272	201	472	169	269	643	68	466	568	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	180	464	272	201	472	169	269	643	68	466	568	136
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	116	68	50	118	42	67	161	17	117	142	34
Total Analysis Volume [veh/h]	180	464	272	201	472	169	269	643	68	466	568	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	22	0	12	21	0	11	21	0	15	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	26	26	8	27	27	9	15	15	13	19	19
g / C, Green / Cycle	0.10	0.38	0.38	0.11	0.38	0.38	0.13	0.21	0.21	0.19	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.06	0.10	0.19	0.06	0.15	0.12	0.09	0.14	0.05	0.15	0.18	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	3192	1425	3101	4567	1425	3101	3192	1425
c, Capacity [veh/h]	318	1723	538	337	1223	546	397	978	305	576	868	387
d1, Uniform Delay [s]	29.92	15.11	16.78	29.74	15.63	15.11	29.14	25.15	22.69	27.31	22.57	20.51
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.58	0.38	3.38	1.70	0.92	1.47	2.03	0.76	0.36	2.78	0.84	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

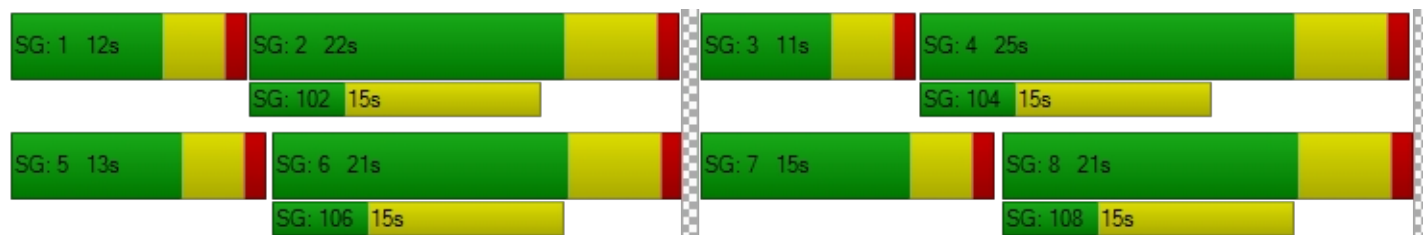
X, volume / capacity	0.57	0.27	0.51	0.60	0.39	0.31	0.68	0.66	0.22	0.81	0.65	0.35
d, Delay for Lane Group [s/veh]	31.50	15.50	20.16	31.44	16.55	16.58	31.17	25.91	23.06	30.09	23.42	21.05
Lane Group LOS	C	B	C	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.42	1.57	3.45	1.58	2.55	1.88	2.12	3.05	0.88	3.65	3.84	1.69
50th-Percentile Queue Length [ft]	35.48	39.21	86.19	39.61	63.69	46.96	52.94	76.25	22.11	91.21	96.08	42.16
95th-Percentile Queue Length [veh]	2.55	2.82	6.21	2.85	4.59	3.38	3.81	5.49	1.59	6.57	6.92	3.04
95th-Percentile Queue Length [ft]	63.87	70.58	155.14	71.29	114.63	84.52	95.28	137.25	39.79	164.18	172.94	75.89

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.50	15.50	20.16	31.44	16.55	16.58	31.17	25.91	23.06	30.09	23.42	21.05
Movement LOS	C	B	C	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.02			20.11			27.16			25.80		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.56											
Intersection LOS	C											
Intersection V/C	0.547											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	15.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↑↶			↵			↵  ↶		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	170	0	586	0	1006	373	395	917	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	170	0	586	0	1006	373	395	917	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	43	0	147	0	252	93	99	229	0
Total Analysis Volume [veh/h]	0	0	0	170	0	586	0	1006	373	395	917	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	19	0	0	11	0	30	41	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		16	16	16	26	26	11	40
g / C, Green / Cycle		0.27	0.27	0.27	0.44	0.44	0.19	0.66
(v / s)_i Volume / Saturation Flow Rate		0.11	0.21	0.21	0.32	0.26	0.13	0.29
s, saturation flow rate [veh/h]		1597	1425	1425	3192	1425	3101	3192
c, Capacity [veh/h]		429	383	383	1406	628	592	2121
d1, Uniform Delay [s]		17.95	20.19	20.19	13.72	12.72	22.51	4.74
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.59	3.21	3.21	3.14	4.11	1.31	0.64
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

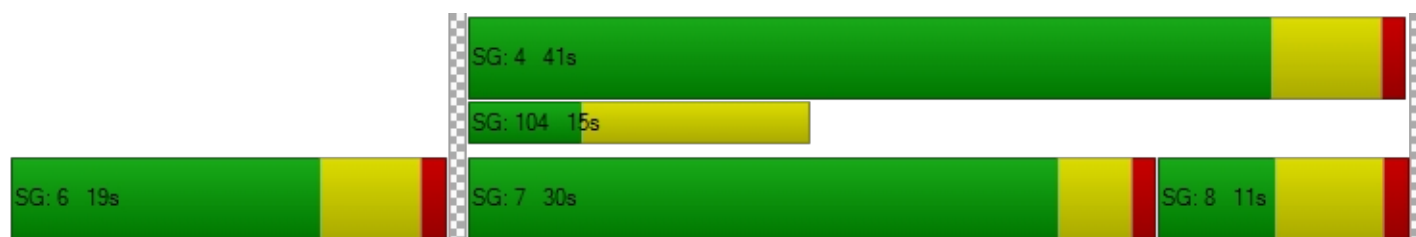
X, volume / capacity		0.40	0.77	0.77	0.72	0.59	0.67	0.43
d, Delay for Lane Group [s/veh]		18.55	23.40	23.40	16.86	16.83	23.82	5.38
Lane Group LOS		B	C	C	B	B	C	A
Critical Lane Group		No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh]		1.75	3.61	3.61	5.00	3.73	2.41	1.64
50th-Percentile Queue Length [ft]		43.86	90.14	90.14	125.00	93.34	60.21	40.97
95th-Percentile Queue Length [veh]		3.16	6.49	6.49	8.67	6.72	4.33	2.95
95th-Percentile Queue Length [ft]		78.95	162.26	162.26	216.67	168.01	108.37	73.74

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	18.55	23.40	23.40	0.00	16.86	16.83	23.82	5.38	0.00
Movement LOS				B	C	C		B	B	C	A	
d_A, Approach Delay [s/veh]	0.00			22.31			16.85			10.93		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	15.80											
Intersection LOS	B											
Intersection V/C	0.648											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	17.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↑↵						↵↑↵			↵↑↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	356	0	612	0	0	0	390	816	0	0	958	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	356	0	612	0	0	0	390	816	0	0	958	229
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	0	153	0	0	0	98	204	0	0	240	57
Total Analysis Volume [veh/h]	356	0	612	0	0	0	390	816	0	0	958	229
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	60	60	60		60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	21	21	21		11	35	22	22
g / C, Green / Cycle	0.35	0.35	0.35		0.18	0.58	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.20	0.22	0.23		0.13	0.26	0.30	0.16
s, saturation flow rate [veh/h]	1597	1441	1425		3101	3192	3192	1425
c, Capacity [veh/h]	560	505	500		557	1859	1180	527
d1, Uniform Delay [s]	15.85	16.29	16.34		23.09	7.02	17.04	14.21
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.29	6.05	6.29		1.61	0.16	1.40	0.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

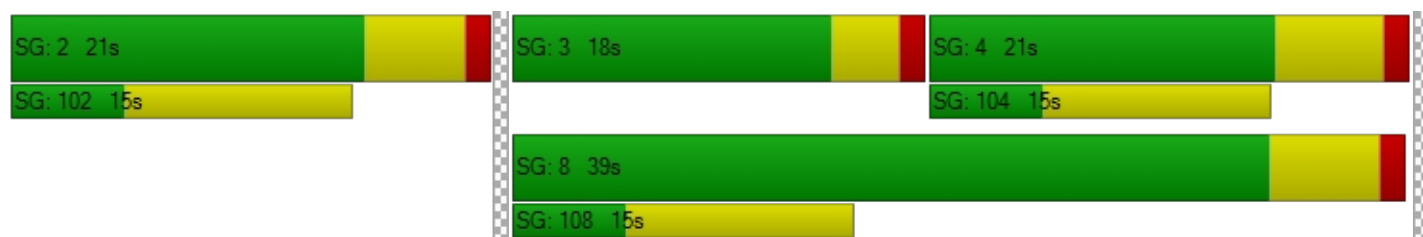
X, volume / capacity	0.58	0.64	0.64		0.70	0.44	0.81	0.43
d, Delay for Lane Group [s/veh]	20.14	22.34	22.63		24.71	7.19	18.44	14.77
Lane Group LOS	C	C	C		C	A	B	B
Critical Lane Group	No	No	Yes		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	3.70	3.96	4.00		2.43	2.02	5.12	2.03
50th-Percentile Queue Length [ft]	92.60	99.08	99.90		60.82	50.48	127.98	50.80
95th-Percentile Queue Length [veh]	6.67	7.13	7.19		4.38	3.63	8.83	3.66
95th-Percentile Queue Length [ft]	166.68	178.34	179.81		109.47	90.87	220.74	91.45

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	20.34	22.34	22.49	0.00	0.00	0.00	24.71	7.19	0.00	0.00	18.44	14.77
Movement LOS	C	C	C				C	A			B	B
d_A, Approach Delay [s/veh]	21.70			0.00			12.85			17.73		
Approach LOS	C			A			B			B		
d_I, Intersection Delay [s/veh]	17.12											
Intersection LOS	B											
Intersection V/C	0.652											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	48	710	43	217	708	76	270	782	45	30	221	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	710	43	217	708	76	270	782	45	30	221	160
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	178	11	54	177	19	68	196	11	8	55	40
Total Analysis Volume [veh/h]	48	710	43	217	708	76	270	782	45	30	221	160
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	13	24	0	15	26	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	23	23	11	28	28	13	24	24	4	15	15
g / C, Green / Cycle	0.08	0.32	0.32	0.16	0.41	0.41	0.19	0.34	0.34	0.06	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.03	0.25	0.03	0.15	0.27	0.27	0.19	0.28	0.28	0.02	0.13	0.14
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1437	1416	1487	1459	1416	1487	1286
c, Capacity [veh/h]	108	915	408	223	601	581	263	507	497	91	327	283
d1, Uniform Delay [s]	30.93	21.40	16.60	29.36	16.97	16.97	28.50	21.14	21.14	31.29	24.62	24.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.20	0.20	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.88	6.41	0.52	22.65	5.68	5.88	32.80	6.08	6.20	2.06	1.86	2.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

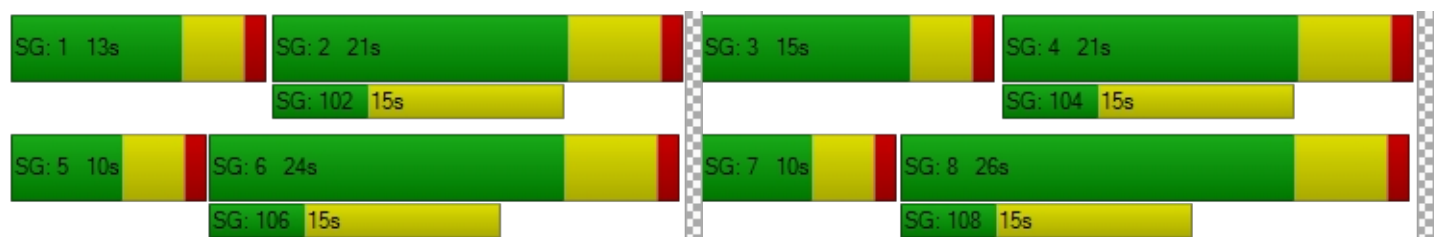
X, volume / capacity	0.45	0.78	0.11	0.98	0.66	0.66	1.03	0.82	0.82	0.33	0.61	0.64
d, Delay for Lane Group [s/veh]	33.81	27.82	17.12	52.02	22.66	22.85	61.30	27.22	27.35	33.35	26.47	27.22
Lane Group LOS	C	C	B	D	C	C	F	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.81	5.47	0.50	4.86	5.68	5.52	6.43	6.35	6.25	0.51	2.90	2.69
50th-Percentile Queue Length [ft]	20.33	136.63	12.39	121.53	141.93	137.93	160.81	158.83	156.29	12.70	72.59	67.15
95th-Percentile Queue Length [veh]	1.46	9.30	0.89	8.48	9.58	9.37	10.72	10.49	10.35	0.91	5.23	4.83
95th-Percentile Queue Length [ft]	36.60	232.48	22.30	211.93	239.62	234.23	268.03	262.17	258.80	22.86	130.67	120.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.81	27.82	17.12	52.02	22.74	22.85	61.30	27.28	27.35	33.35	26.55	27.22
Movement LOS	C	C	B	D	C	C	F	C	C	C	C	C
d_A, Approach Delay [s/veh]	27.60			29.10			35.66			27.30		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	30.69											
Intersection LOS	C											
Intersection V/C	0.735											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type:	Signalized	Delay (sec / veh):	43.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.718

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	2	0	0
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	10	574	914	66	624	6	7	387	46	472	91	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	574	914	66	624	6	7	387	46	472	91	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	144	229	17	156	2	2	97	12	118	23	7
Total Analysis Volume [veh/h]	10	574	914	66	624	6	7	387	46	472	91	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	38	19	10	38	0	19	23	0	19	23	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	38	57	6	41	41	3	21	17	35
g / C, Green / Cycle	0.04	0.42	0.63	0.07	0.45	0.45	0.03	0.23	0.19	0.39
(v / s)_i Volume / Saturation Flow Rate	0.01	0.18	0.65	0.04	0.19	0.19	0.00	0.23	0.15	0.07
s, saturation flow rate [veh/h]	1573	3146	1404	1573	1652	1647	1573	1652	3056	1590
c, Capacity [veh/h]	58	1319	851	109	746	744	54	386	577	616
d1, Uniform Delay [s]	41.99	18.55	17.73	40.67	16.72	16.72	42.13	34.50	35.01	18.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.23	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.37	1.05	52.65	5.26	1.75	1.76	1.05	32.20	2.92	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.17	0.44	1.07	0.60	0.42	0.42	0.13	1.00	0.82	0.19
d, Delay for Lane Group [s/veh]	43.35	19.60	70.37	45.93	18.47	18.48	43.18	66.70	37.93	18.36
Lane Group LOS	D	B	F	D	B	B	D	F	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.23	4.11	26.51	1.53	4.40	4.39	0.16	11.41	4.96	1.54
50th-Percentile Queue Length [ft]	5.77	102.87	662.75	38.31	110.12	109.82	4.06	285.19	124.06	38.38
95th-Percentile Queue Length [veh]	0.42	7.41	37.07	2.76	7.85	7.83	0.29	16.98	8.62	2.76
95th-Percentile Queue Length [ft]	10.39	185.17	926.66	68.97	196.17	195.75	7.30	424.59	215.39	69.09

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.35	19.60	70.37	45.93	18.48	18.48	43.18	66.70	0.00	37.93	18.36	18.36
Movement LOS	D	B	F	D	B	B	D	F		D	B	B
d_A, Approach Delay [s/veh]	50.74			21.08			66.28			34.05		
Approach LOS	D			C			E			C		
d_I, Intersection Delay [s/veh]	43.07											
Intersection LOS	D											
Intersection V/C	0.718											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.500

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	204	456	123	160	576	280	389	948	177	93	318	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	204	456	123	160	576	280	389	948	177	93	318	34
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	114	31	40	144	70	97	237	44	23	80	9
Total Analysis Volume [veh/h]	204	456	123	160	576	280	389	948	177	93	318	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	24	0	10	22	0	14	26	0	10	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	27	27	7	27	27	12	21	21	7	15	15
g / C, Green / Cycle	0.11	0.39	0.39	0.11	0.38	0.38	0.17	0.29	0.29	0.10	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.09	0.05	0.13	0.20	0.13	0.21	0.12	0.03	0.07	0.02
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	355	1779	555	328	1739	543	529	1338	418	302	1004	313
d1, Uniform Delay [s]	29.37	14.48	14.27	29.52	15.36	16.70	27.54	22.08	19.98	29.40	22.89	21.82
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.47	0.35	0.92	1.13	0.51	3.48	2.01	0.70	0.68	0.57	0.18	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

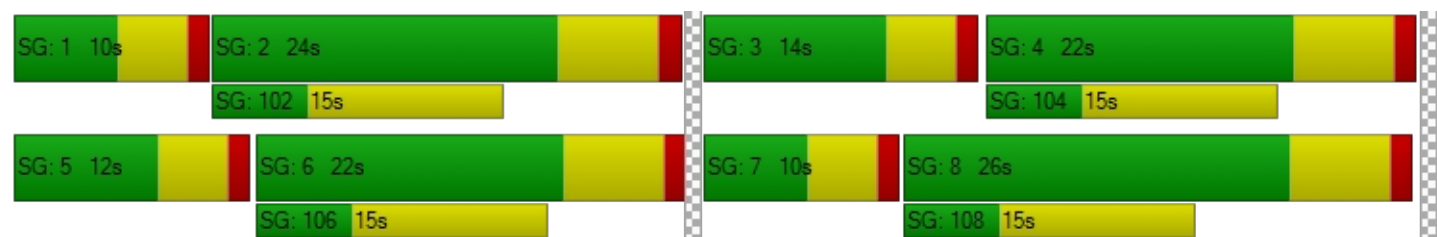
X, volume / capacity	0.57	0.26	0.22	0.49	0.33	0.52	0.74	0.71	0.42	0.31	0.32	0.11
d, Delay for Lane Group [s/veh]	30.84	14.83	15.19	30.64	15.87	20.18	29.55	22.78	20.66	29.97	23.07	21.97
Lane Group LOS	C	B	B	C	B	C	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.59	1.50	1.29	1.24	1.99	3.55	2.99	4.24	2.18	0.71	1.37	0.43
50th-Percentile Queue Length [ft]	39.71	37.40	32.22	30.92	49.78	88.81	74.82	105.98	54.59	17.64	34.14	10.64
95th-Percentile Queue Length [veh]	2.86	2.69	2.32	2.23	3.58	6.39	5.39	7.62	3.93	1.27	2.46	0.77
95th-Percentile Queue Length [ft]	71.48	67.32	58.00	55.66	89.61	159.85	134.67	190.40	98.26	31.75	61.45	19.15

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.84	14.83	15.19	30.64	15.87	20.18	29.55	22.78	20.66	29.97	23.07	21.97
Movement LOS	C	B	B	C	B	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.06			19.38			24.27			24.43		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	21.88											
Intersection LOS	C											
Intersection V/C	0.500											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 68: Archibald Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	3.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.405

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Eucalyptus Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Eucalyptus Ave	
Base Volume Input [veh/h]	868	30	47	1093	2	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	868	30	47	1093	2	22
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	217	8	12	273	1	6
Total Analysis Volume [veh/h]	868	30	47	1093	2	22
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	5.2	0.0	3.6	5.2	3.2	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	31	0	10	41	29	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	1.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	54	54	6	62	4
g / C, Green / Cycle	0.77	0.77	0.08	0.88	0.06
(v / s)_i Volume / Saturation Flow Rate	0.30	0.31	0.03	0.39	0.02
s, saturation flow rate [veh/h]	1487	1470	1416	2831	1275
c, Capacity [veh/h]	1150	1137	114	2498	77
d1, Uniform Delay [s]	2.57	2.59	30.63	0.79	31.48
k, delay calibration	0.50	0.50	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.00	1.03	2.40	0.56	2.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

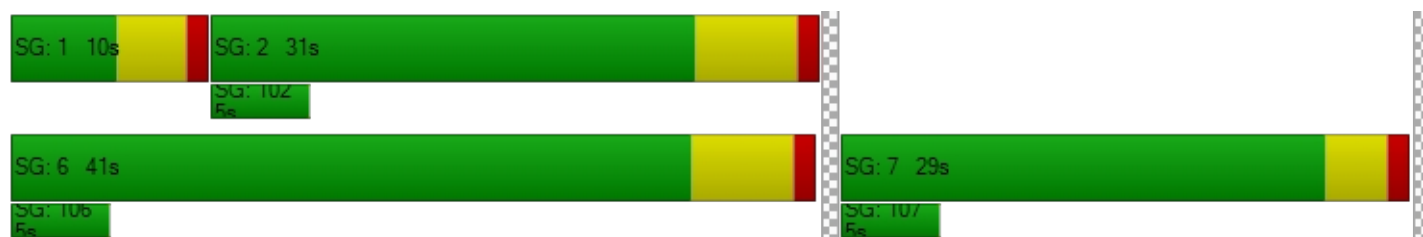
X, volume / capacity	0.39	0.40	0.41	0.44	0.31
d, Delay for Lane Group [s/veh]	3.57	3.62	33.02	1.35	33.73
Lane Group LOS	A	A	C	A	C
Critical Lane Group	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh]	0.84	0.85	0.78	0.19	0.41
50th-Percentile Queue Length [ft]	21.04	21.26	19.57	4.85	10.35
95th-Percentile Queue Length [veh]	1.51	1.53	1.41	0.35	0.75
95th-Percentile Queue Length [ft]	37.87	38.27	35.23	8.73	18.63

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	3.59	3.62	33.02	1.35	33.73	33.73
Movement LOS	A	A	C	A	C	C
d_A, Approach Delay [s/veh]	3.59		2.66		33.73	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.43					
Intersection LOS	A					
Intersection V/C	0.405					

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**OPENING YEAR (2023) NO PROJECT AM/PM PEAK HOUR**

## Opening Year 2023 No Project AM

Vistro File: V:\...\20180201\_PHF&LTrev-  
Exst+cum23+Proj.vistro

Scenario 9 Ex+Cumm2023 AM Peak

Report File: V:\...\Future 2023 No Proj AM.pdf

2/8/2018

## Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Euclid Ave / Philadelphia St	Signalized	HCM 2010	WB Thru	0.711	26.4	C
2	Grove Ave / Philadelphia St	Signalized	HCM 2010	NB Left	0.504	18.6	B
3	Archibald Ave / Philadelphia St	Signalized	HCM 2010	EB Left	0.346	15.3	B
4	SR60 WB Ramp / Euclid Ave	Signalized	HCM 2010	NB Left	0.735	18.1	B
5	SR60 EB Ramp / Euclid Ave	Signalized	HCM 2010	EB Right	0.911	33.7	C
6	SR60 WB Ramp / Grove Ave	Signalized	HCM 2010	SB Right	0.822	21.1	C
7	SR60 EB Ramp / Grove Ave	Signalized	HCM 2010	EB Left	0.892	35.4	D
8	SR60 WB Ramp / Archibald Ave	Signalized	HCM 2010	NB Left	0.581	14.6	B
9	SR60 EB Ramp / Archibald Ave	Signalized	HCM 2010	EB Right	0.786	18.9	B
10	Euclid Ave / Walnut St	Signalized	HCM 2010	NB Left	0.672	19.2	B
11	Grove Ave / Walnut Ave	Signalized	HCM 2010	SB Left	0.477	19.7	B
12	Archibald Ave / Walnut Ave	Signalized	HCM 2010	WB Right	0.519	7.4	A
13	Euclid Ave / Riverside Dr	Signalized	HCM 2010	WB Left	0.712	25.4	C
14	Grove Ave / Riverside Dr	Signalized	HCM 2010	EB Left	0.292	16.5	B
15	Archibald Ave / Riverside Dr	Signalized	HCM 2010	WB Left	0.622	18.1	B
16	Euclid Ave / Chino Ave	Signalized	HCM 2010	WB Thru	0.995	50.3	D
17	Grove Ave / Chino Ave	All-way stop	HCM 2010	EB Thru	0.900	42.1	E
18	Archibald Ave / Chino Ave	Signalized	HCM 2010	EB Left	0.584	19.1	B
19	Euclid Ave / Schaefer Ave	Signalized	HCM 2010	WB Left	0.794	29.2	C
20	Grove Ave / Schaefer Ave	All-way stop	HCM 2010	NB Thru	0.475	11.7	B
21	SR71 SB Ramp / Grand Ave	Signalized	HCM 2010	WB Left	0.660	12.9	B
22	SR71 NB Ramp / Grand Ave	Signalized	HCM 2010	SB Right	0.936	59.8	E
23	Ramona Ave / Edison Ave	Signalized	HCM 2010	EB Left	0.655	22.6	C
24	Central Ave / Edison Ave	Signalized	HCM 2010	EB Left	0.736	26.2	C
25	Mountain Ave/ Edison Ave	Signalized	HCM 2010	EB Left	0.533	15.6	B
26	Euclid Ave / Edison Ave	Signalized	HCM 2010	SB Left	0.612	16.1	B
27	Grove Ave / Edison Ave	All-way stop	HCM 2010	WB Thru	1.779	205.3	F
28	Archibald Ave / Edison Ave	Signalized	HCM 2010	NB Thru	1.036	95.2	F
29	Milliken Ave / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	NB Left	1.287	95.9	F
30	I-15 SB Ramp / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	SB Right	0.984	47.7	D



31	I-15 NB Ramp / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	EB Right	0.370	22.7	C
32	Euclid Ave / Eucalyptus Ave	Signalized	HCM 2010	SB Left	0.764	19.2	B
33	Grove Ave / Eucalyptus Ave	Two-way stop	HCM 2010	WB Left	0.098	18.8	C
34	Carpenter Ave / Eucalyptus Ave	Two-way stop	HCM 2010	NB Left	0.018	9.5	A
35	Euclid Ave / Merrill Ave	Signalized	HCM 2010	WB Left	0.732	74.0	E
36	Grove Ave / Merrill Ave	All-way stop	HCM 2010	EB Thru	1.294	119.1	F
37	Carpenter Ave / Merrill Ave	Two-way stop	HCM 2010	NB Left	1.829	655.4	F
38	Archibald Ave / Merrill Ave	Signalized	HCM 2010	WB Left	0.769	27.4	C
39	Archibald Ave / Limonite Ave	Signalized	HCM 2010	NB Thru	0.639	26.1	C
40	Hamner Ave / Limonite Ave	Signalized	HCM 2010	WB Thru	1.031	65.8	E
41	I-15 SB Ramp / Limonite Ave	Signalized	HCM 2010	SB Right	1.836	287.4	F
42	I-15 NB Ramp / Limonite Ave	Signalized	HCM 2010	EB Left	1.055	77.5	E
43	Euclid Ave / Kimball Ave	Signalized	HCM 2010	NB Left	0.679	23.1	C
44	Euclid Ave / Pine Ave	Signalized	HCM 2010	SB Left	0.663	24.1	C
45	Archibald Ave / Schleisman Rd	Signalized	HCM 2010	NB Left	0.709	25.2	C
46	Hellman Ave/Eucalyptus Ave	Two-way stop	HCM 2010	NB Left	0.000	14.1	B
47	Hellman Ave/Merrill Ave	Unknown	?		?	?	?
66	Archibald Ave / Eucalyptus Ave	Signalized	HCM 2010	NB Right	1.088	89.5	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	26.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	138	883	163	56	862	98	109	313	128	179	437	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	14	0	0	31	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	897	163	56	893	98	109	313	128	179	437	92
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	236	43	15	235	26	29	82	34	47	115	24
Total Analysis Volume [veh/h]	145	944	172	59	940	103	115	329	135	188	460	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	25	0	10	22	0	9	22	0	13	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	9	25	25	6	22	22	33	23	23	33	24
g / C, Green / Cycle	0.13	0.36	0.36	0.08	0.32	0.32	0.47	0.32	0.32	0.47	0.35
(v / s)_i Volume / Saturation Flow Rate	0.09	0.30	0.12	0.04	0.21	0.22	0.12	0.14	0.15	0.18	0.33
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1659	953	1676	1514	1051	1692
c, Capacity [veh/h]	204	1158	517	130	1009	524	329	539	486	519	590
d1, Uniform Delay [s]	29.27	20.18	16.16	30.68	20.85	20.87	16.82	18.84	18.90	13.93	22.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.28
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.49	6.37	1.73	2.48	3.69	7.01	0.64	0.59	0.67	0.42	17.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

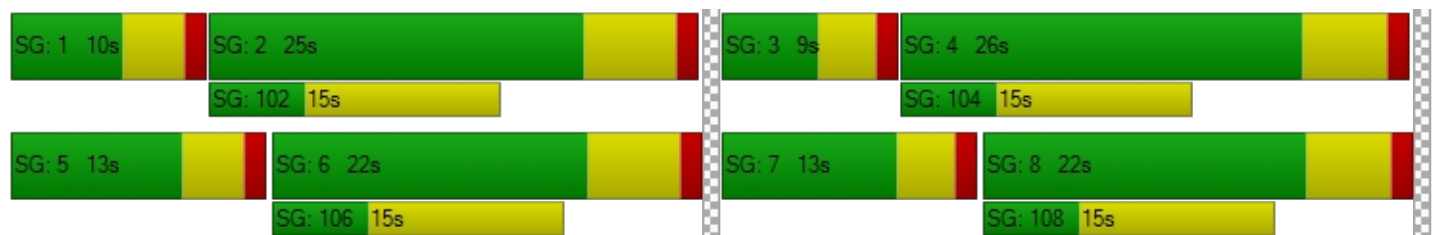
X, volume / capacity	0.71	0.82	0.33	0.45	0.68	0.68	0.35	0.45	0.46	0.36	0.94
d, Delay for Lane Group [s/veh]	33.76	26.54	17.89	33.15	24.54	27.87	17.46	19.43	19.57	14.36	39.18
Lane Group LOS	C	C	B	C	C	C	B	B	B	B	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.43	7.09	2.02	0.98	4.87	5.56	1.04	2.87	2.65	1.74	10.53
50th-Percentile Queue Length [ft]	60.69	177.25	50.46	24.50	121.69	138.99	25.92	71.75	66.26	43.61	263.24
95th-Percentile Queue Length [veh]	4.37	11.46	3.63	1.76	8.49	9.43	1.87	5.17	4.77	3.14	15.85
95th-Percentile Queue Length [ft]	109.25	286.42	90.83	44.09	212.14	235.67	46.66	129.14	119.27	78.49	396.28

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.76	26.54	17.89	33.15	25.44	27.87	17.46	19.47	19.57	14.36	39.18	39.18
Movement LOS	C	C	B	C	C	C	B	B	B	B	D	D
d_A, Approach Delay [s/veh]	26.19			26.08			19.09			32.92		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	26.40											
Intersection LOS	C											
Intersection V/C	0.711											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.504

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	188	915	188	77	671	80	136	209	247	76	144	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	78	0	0	56	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	993	188	77	727	80	136	209	247	76	144	80
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	261	49	20	191	21	36	55	65	20	38	21
Total Analysis Volume [veh/h]	198	1045	198	81	765	84	143	220	260	80	152	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	30	0	10	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	8	33	33	6	32	32	24	17	17	24	15	15
g / C, Green / Cycle	0.11	0.48	0.48	0.09	0.45	0.45	0.35	0.24	0.24	0.35	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.26	0.26	0.03	0.18	0.18	0.12	0.13	0.18	0.08	0.07	0.08
s, saturation flow rate [veh/h]	3101	3192	1543	3101	3192	1593	1212	1676	1482	1041	1676	1547
c, Capacity [veh/h]	344	1519	734	274	1447	722	487	396	350	358	371	342
d1, Uniform Delay [s]	29.55	13.04	13.04	29.86	12.71	12.73	18.92	23.50	24.76	18.99	22.85	22.95
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.52	1.45	2.97	0.59	0.79	1.60	0.33	1.22	3.12	0.31	0.50	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.58	0.55	0.55	0.30	0.39	0.39	0.29	0.56	0.74	0.22	0.32	0.34
d, Delay for Lane Group [s/veh]	31.06	14.48	16.01	30.45	13.50	14.33	19.25	24.72	27.89	19.30	23.35	23.53
Lane Group LOS	C	B	B	C	B	B	B	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.53	4.07	4.24	0.61	2.58	2.76	1.65	3.05	3.93	0.89	1.57	1.54
50th-Percentile Queue Length [ft]	38.13	101.64	106.06	15.29	64.48	68.92	41.37	76.25	98.36	22.36	39.31	38.52
95th-Percentile Queue Length [veh]	2.75	7.32	7.62	1.10	4.64	4.96	2.98	5.49	7.08	1.61	2.83	2.77
95th-Percentile Queue Length [ft]	68.63	182.94	190.50	27.52	116.06	124.05	74.47	137.25	177.05	40.24	70.75	69.34



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.06	14.79	16.01	30.45	13.72	14.33	19.25	24.72	27.89	19.30	23.39	23.53
Movement LOS	C	B	B	C	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	17.19			15.23			24.79			22.39		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.57											
Intersection LOS	B											
Intersection V/C	0.504											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.346

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	372	670	219	34	212	27	23	117	84	71	254	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	7	383	0	0	183	0	0	0	10	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	379	1053	219	34	395	27	23	117	94	71	254	40
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	277	58	9	104	7	6	31	25	19	67	11
Total Analysis Volume [veh/h]	399	1108	231	36	416	28	24	123	99	75	267	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.0	3.2	4.8	3.0	3.0	4.4	3.2	3.0	4.4	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	14	25	9	10	21	14	14	26	14	9	21	10
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	12	43	51	5	36	42	4	8	22	6	10	17
g / C, Green / Cycle	0.17	0.61	0.73	0.07	0.51	0.60	0.06	0.12	0.32	0.08	0.15	0.25
(v / s)_i Volume / Saturation Flow Rate	0.13	0.24	0.16	0.01	0.09	0.02	0.01	0.04	0.07	0.02	0.08	0.03
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	524	2799	995	210	2336	808	173	383	408	265	478	305
d1, Uniform Delay [s]	27.74	6.93	3.80	30.79	9.19	6.69	31.46	28.20	19.17	30.01	27.62	22.26
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.32	0.42	0.55	0.38	0.17	0.02	0.36	0.48	0.31	0.58	1.03	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

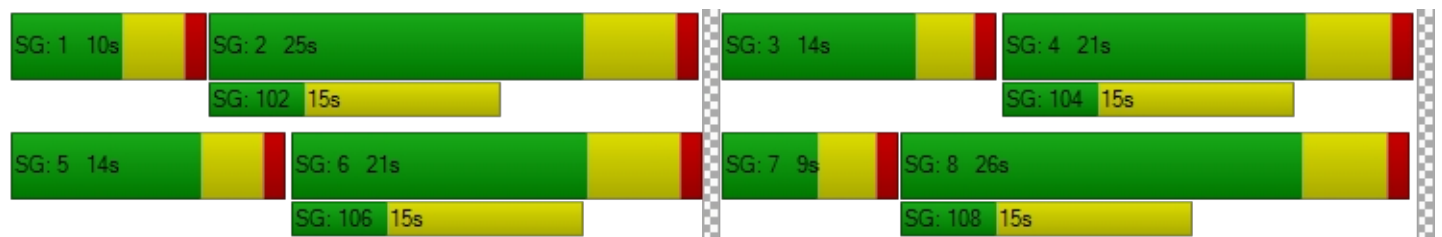
X, volume / capacity	0.76	0.40	0.23	0.17	0.18	0.03	0.14	0.32	0.24	0.28	0.56	0.14
d, Delay for Lane Group [s/veh]	30.06	7.35	4.35	31.17	9.36	6.71	31.82	28.68	19.48	30.58	28.65	22.46
Lane Group LOS	C	A	A	C	A	A	C	C	B	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.10	2.14	0.85	0.28	0.97	0.15	0.19	0.91	1.16	0.58	1.99	0.53
50th-Percentile Queue Length [ft]	77.61	53.59	21.16	7.02	24.34	3.72	4.76	22.68	28.93	14.42	49.81	13.36
95th-Percentile Queue Length [veh]	5.59	3.86	1.52	0.51	1.75	0.27	0.34	1.63	2.08	1.04	3.59	0.96
95th-Percentile Queue Length [ft]	139.69	96.46	38.09	12.63	43.82	6.69	8.57	40.82	52.07	25.96	89.66	24.05

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.06	7.35	4.35	31.17	9.36	6.71	31.82	28.68	19.48	30.58	28.65	22.46
Movement LOS	C	A	A	C	A	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	12.16			10.84			25.28			28.35		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.26											
Intersection LOS	B											
Intersection V/C	0.346											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	279	831	0	0	803	454	0	0	0	450	0	398
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	86	16	0	0	43	0	0	0	0	272	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	365	847	0	0	846	454	0	0	0	722	0	398
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	96	223	0	0	223	119	0	0	0	190	0	105
Total Analysis Volume [veh/h]	384	892	0	0	891	478	0	0	0	760	0	419
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	11	39	0	0	28	0	0	0	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	9	37	26	26		19	19	19
g / C, Green / Cycle	0.15	0.62	0.43	0.43		0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.12	0.28	0.28	0.34		0.25	0.25	0.28
s, saturation flow rate [veh/h]	3101	3192	3192	1425		1597	1584	1425
c, Capacity [veh/h]	465	1968	1383	618		506	502	451
d1, Uniform Delay [s]	24.74	6.12	13.36	14.50		18.58	18.63	19.34
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	3.78	0.76	2.32	9.16		2.62	2.73	5.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.83	0.45	0.64	0.77		0.78	0.78	0.87
d, Delay for Lane Group [s/veh]	28.52	6.87	15.69	23.66		21.20	21.36	25.27
Lane Group LOS	C	A	B	C		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	2.62	2.10	4.22	5.96		4.56	4.59	5.11
50th-Percentile Queue Length [ft]	65.43	52.38	105.50	149.10		114.12	114.71	127.81
95th-Percentile Queue Length [veh]	4.71	3.77	7.59	9.97		8.07	8.10	8.82
95th-Percentile Queue Length [ft]	117.77	94.28	189.73	249.23		201.71	202.54	220.52

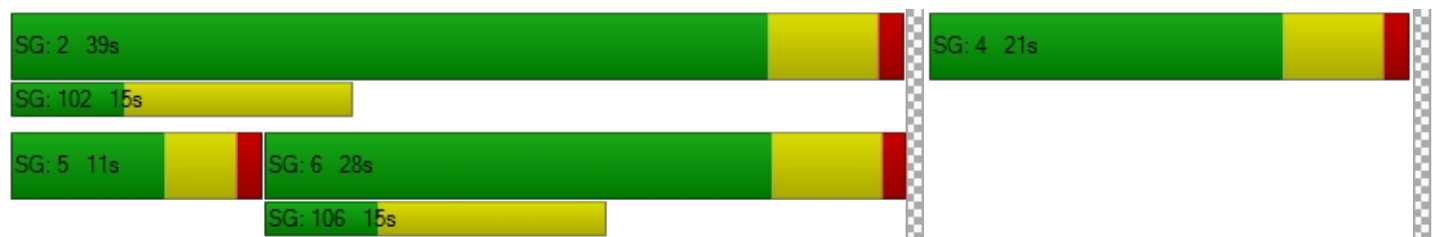


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.52	6.87	0.00	0.00	15.69	23.66	0.00	0.00	0.00	21.28	21.36	25.03
Movement LOS	C	A			B	C				C	C	C
d_A, Approach Delay [s/veh]	13.39			18.47			0.00			22.61		
Approach LOS	B			B			A			C		
d_I, Intersection Delay [s/veh]	18.05											
Intersection LOS	B											
Intersection V/C	0.735											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	33.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.911

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							+ +					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	715	478	273	957	0	390	2	278	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	103	49	0	314	0	0	0	321	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	818	527	273	1271	0	390	2	599	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	215	139	72	334	0	103	1	158	0	0	0
Total Analysis Volume [veh/h]	0	861	555	287	1338	0	411	2	631	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	28	0	10	38	0	0	32	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C	
C, Cycle Length [s]	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	26	26	8	36	30	30	
g / C, Green / Cycle	0.37	0.37	0.11	0.51	0.43	0.43	
(v / s)_i Volume / Saturation Flow Rate	0.27	0.37	0.09	0.42	0.26	0.44	
s, saturation flow rate [veh/h]	3192	1482	3101	3192	1597	1426	
c, Capacity [veh/h]	1186	550	354	1642	684	611	
d1, Uniform Delay [s]	18.94	22.00	30.26	14.22	15.39	20.00	
k, delay calibration	0.50	0.50	0.11	0.50	0.16	0.48	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.90	40.42	4.44	4.58	1.24	45.21	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.73	1.01	0.81	0.82	0.60	1.04	
d, Delay for Lane Group [s/veh]	22.84	62.42	34.70	18.80	16.63	65.21	
Lane Group LOS	C	F	C	B	B	F	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	5.88	13.96	2.41	8.08	4.54	15.98	
50th-Percentile Queue Length [ft]	147.01	349.02	60.36	201.95	113.44	399.62	
95th-Percentile Queue Length [veh]	9.86	20.20	4.35	12.74	8.03	23.11	
95th-Percentile Queue Length [ft]	246.43	505.00	108.65	318.48	200.78	577.73	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	22.84	62.42	34.70	18.80	0.00	16.63	65.21	65.21	0.00	0.00	0.00
Movement LOS		C	F	C	B		B	E	F			
d_A, Approach Delay [s/veh]	38.35			21.61			46.08			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	33.67											
Intersection LOS	C											
Intersection V/C	0.911											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵						↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	199	981	0	0	604	445	0	0	0	182	1	430
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	68	78	0	0	56	0	0	0	0	24	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	267	1059	0	0	660	445	0	0	0	206	1	430
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	279	0	0	174	117	0	0	0	54	0	113
Total Analysis Volume [veh/h]	281	1115	0	0	695	468	0	0	0	217	1	453
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	0	4	0
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	14	38	0	0	24	0	0	0	0	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	0	10	0
Rest In Walk		No			No							No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	No			No							No	
Pedestrian Recall	No	No			No							No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	12	36	22	22		20	20
g / C, Green / Cycle	0.20	0.60	0.37	0.37		0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.18	0.35	0.22	0.33		0.14	0.32
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	319	1915	1170	523		532	475
d1, Uniform Delay [s]	23.30	7.38	15.38	17.92		15.44	19.55
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	7.80	1.30	2.22	20.57		0.51	16.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.88	0.58	0.59	0.90		0.41	0.95
d, Delay for Lane Group [s/veh]	31.10	8.68	17.60	38.49		15.95	35.68
Lane Group LOS	C	A	B	D		B	D
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	4.02	3.00	3.47	7.86		2.04	7.29
50th-Percentile Queue Length [ft]	100.58	75.08	86.66	196.42		50.93	182.26
95th-Percentile Queue Length [veh]	7.24	5.41	6.24	12.45		3.67	11.72
95th-Percentile Queue Length [ft]	181.04	135.15	155.99	311.34		91.68	292.97

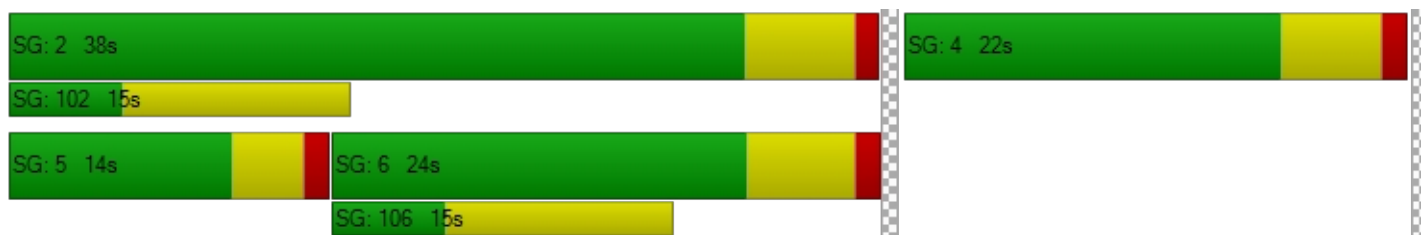


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.10	8.68	0.00	0.00	17.60	38.49	0.00	0.00	0.00	15.95	15.95	35.68
Movement LOS	C	A			B	D				B	B	D
d_A, Approach Delay [s/veh]	13.19			26.01			0.00			29.27		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	21.15											
Intersection LOS	C											
Intersection V/C	0.822											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	35.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.892

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑			←↑↑			↑↑					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	578	242	251	543	0	597	0	148	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	146	38	0	80	0	0	0	42	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	724	280	251	623	0	597	0	190	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	191	74	66	164	0	157	0	50	0	0	0
Total Analysis Volume [veh/h]	0	762	295	264	656	0	628	0	200	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	23	0	12	35	0	0	25	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	21	21	10	33	23	23	
g / C, Green / Cycle	0.35	0.35	0.17	0.55	0.38	0.38	
(v / s)_i Volume / Saturation Flow Rate	0.32	0.33	0.17	0.21	0.39	0.14	
s, saturation flow rate [veh/h]	1676	1587	1597	3192	1597	1425	
c, Capacity [veh/h]	587	556	266	1756	612	546	
d1, Uniform Delay [s]	18.51	19.00	24.96	7.65	18.50	13.27	
k, delay calibration	0.50	0.50	0.11	0.50	0.29	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	19.40	27.88	23.82	0.61	34.73	0.41	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

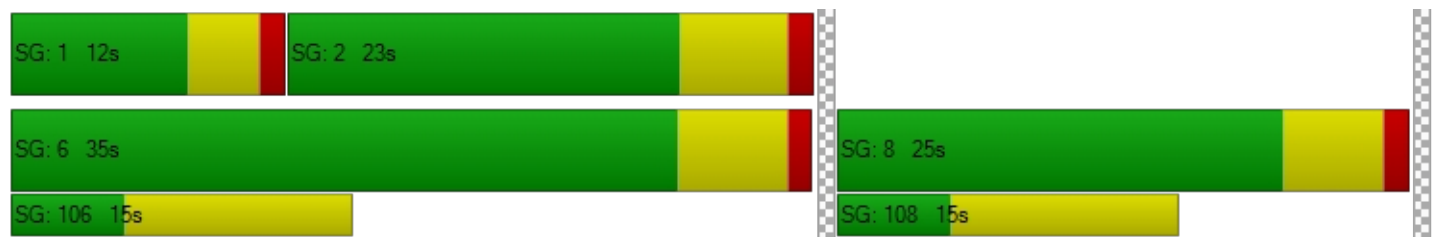
X, volume / capacity	0.90	0.95	0.99	0.37	1.03	0.37	
d, Delay for Lane Group [s/veh]	37.91	46.88	48.78	8.26	53.23	13.68	
Lane Group LOS	D	D	D	A	F	B	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	8.95	10.24	5.03	1.77	12.79	1.68	
50th-Percentile Queue Length [ft]	223.69	256.02	125.66	44.33	319.83	41.92	
95th-Percentile Queue Length [veh]	13.85	15.49	8.70	3.19	18.98	3.02	
95th-Percentile Queue Length [ft]	346.33	387.22	217.58	79.80	474.48	75.46	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	40.66	46.88	48.78	8.26	0.00	53.23	53.23	13.68	0.00	0.00	0.00
Movement LOS		D	D	D	A		F	D	B			
d_A, Approach Delay [s/veh]	42.40			19.89			43.68			0.00		
Approach LOS	D			B			D			A		
d_I, Intersection Delay [s/veh]	35.39											
Intersection LOS	D											
Intersection V/C	0.892											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	476	1012	0	0	279	104	0	0	0	253	2	383
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	218	444	0	0	247	0	0	0	0	201	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	694	1456	0	0	526	104	0	0	0	454	2	383
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	183	383	0	0	138	27	0	0	0	119	1	101
Total Analysis Volume [veh/h]	731	1533	0	0	554	109	0	0	0	478	2	403
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	23	34	0	0	11	0	0	0	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	17	39	19	19		17	17	17
g / C, Green / Cycle	0.29	0.65	0.32	0.32		0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.24	0.34	0.14	0.14		0.19	0.19	0.20
s, saturation flow rate [veh/h]	3101	4567	3192	1542		1597	1525	1425
c, Capacity [veh/h]	904	2961	1033	499		455	435	406
d1, Uniform Delay [s]	19.71	5.58	15.93	16.02		18.89	19.02	19.23
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	1.79	0.65	1.30	2.83		1.64	1.87	2.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.52	0.43	0.44		0.66	0.68	0.71
d, Delay for Lane Group [s/veh]	21.50	6.23	17.22	18.85		20.53	20.89	21.52
Lane Group LOS	C	A	B	B		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	4.28	2.11	2.22	2.44		3.38	3.37	3.36
50th-Percentile Queue Length [ft]	106.95	52.76	55.44	60.89		84.49	84.24	83.96
95th-Percentile Queue Length [veh]	7.67	3.80	3.99	4.38		6.08	6.07	6.05
95th-Percentile Queue Length [ft]	191.75	94.97	99.79	109.61		152.08	151.63	151.13

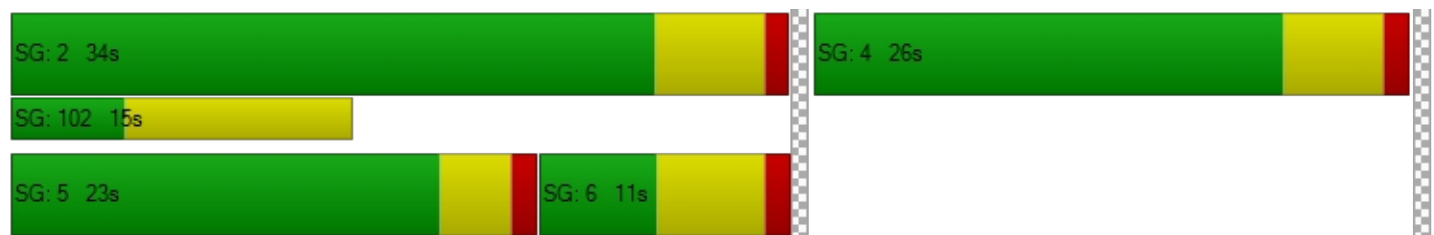


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	21.50	6.23	0.00	0.00	17.55	18.85	0.00	0.00	0.00	20.67	20.89	21.35
Movement LOS	C	A			B	B				C	C	C
d_A, Approach Delay [s/veh]	11.16			17.77			0.00			20.97		
Approach LOS	B			B			A			C		
d_I, Intersection Delay [s/veh]	14.58											
Intersection LOS	B											
Intersection V/C	0.581											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	18.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	200.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	1157	337	76	451	0	319	1	295	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	654	166	0	445	0	0	4	192	0	6	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1811	503	76	896	0	319	5	487	0	6	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	477	132	20	236	0	84	1	128	0	2	0
Total Analysis Volume [veh/h]	0	1906	529	80	943	0	336	5	513	0	6	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	35	0	10	45	0	0	15	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	35	35	6	43	13	13	13	
g / C, Green / Cycle	0.58	0.58	0.10	0.72	0.22	0.22	0.22	
(v / s)_i Volume / Saturation Flow Rate	0.51	0.54	0.05	0.21	0.18	0.19	0.20	
s, saturation flow rate [veh/h]	3192	1504	1597	4567	1597	1452	1425	
c, Capacity [veh/h]	1861	877	160	3273	346	315	309	
d1, Uniform Delay [s]	10.61	11.33	25.57	3.04	22.56	22.83	22.89	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.98	16.98	2.40	0.22	5.82	8.81	9.63	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.87	0.93	0.50	0.29	0.85	0.89	0.90	
d, Delay for Lane Group [s/veh]	16.59	28.31	27.97	3.26	28.38	31.65	32.52	
Lane Group LOS	B	C	C	A	C	C	C	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh]	7.48	10.47	1.09	0.62	4.06	4.16	4.20	
50th-Percentile Queue Length [ft]	186.96	261.81	27.26	15.40	101.44	104.05	104.90	
95th-Percentile Queue Length [veh]	11.96	15.78	1.96	1.11	7.30	7.49	7.55	
95th-Percentile Queue Length [ft]	299.08	394.49	49.06	27.71	182.59	187.29	188.82	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	18.33	28.31	27.97	3.26	0.00	28.86	31.65	32.13	0.00	0.00	0.00
Movement LOS		B	C	C	A		C	C	C			
d_A, Approach Delay [s/veh]	20.50			5.19			30.81			0.00		
Approach LOS	C			A			C			A		
d_I, Intersection Delay [s/veh]	18.91											
Intersection LOS	B											
Intersection V/C	0.786											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TTT			TTTT			TT			TT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	121	840	54	152	899	47	126	265	93	61	278	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	164	0	0	636	0	0	0	84	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	1004	54	152	1535	47	126	265	177	61	278	182
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	264	14	40	404	12	33	70	47	16	73	48
Total Analysis Volume [veh/h]	127	1057	57	160	1616	49	133	279	186	64	293	192
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	29	0	10	21	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	28	28	7	27	27	19	19	19	19	19	19
g / C, Green / Cycle	0.13	0.47	0.47	0.11	0.45	0.45	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.09	0.26	0.26	0.06	0.40	0.04	0.18	0.17	0.17	0.09	0.17	0.18
s, saturation flow rate [veh/h]	1416	2831	1448	2750	4050	1264	724	1487	1293	737	1487	1295
c, Capacity [veh/h]	186	1326	679	316	1830	571	232	471	409	239	471	410
d1, Uniform Delay [s]	24.85	11.46	11.46	24.96	15.00	9.38	26.11	16.79	16.86	23.08	16.92	17.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.34	1.68	3.27	1.26	6.60	0.30	2.23	0.90	1.08	0.59	0.98	1.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.68	0.56	0.56	0.51	0.88	0.09	0.57	0.52	0.53	0.27	0.54	0.56
d, Delay for Lane Group [s/veh]	29.19	13.14	14.72	26.22	21.61	9.68	28.34	17.70	17.94	23.67	17.91	18.20
Lane Group LOS	C	B	B	C	C	A	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	1.78	3.06	3.43	1.03	6.29	0.34	1.90	2.50	2.24	0.78	2.62	2.37
50th-Percentile Queue Length [ft]	44.54	76.41	85.70	25.63	157.36	8.53	47.41	62.42	56.01	19.61	65.52	59.31
95th-Percentile Queue Length [veh]	3.21	5.50	6.17	1.85	10.41	0.61	3.41	4.49	4.03	1.41	4.72	4.27
95th-Percentile Queue Length [ft]	80.17	137.55	154.27	46.14	260.23	15.36	85.34	112.36	100.82	35.30	117.93	106.76

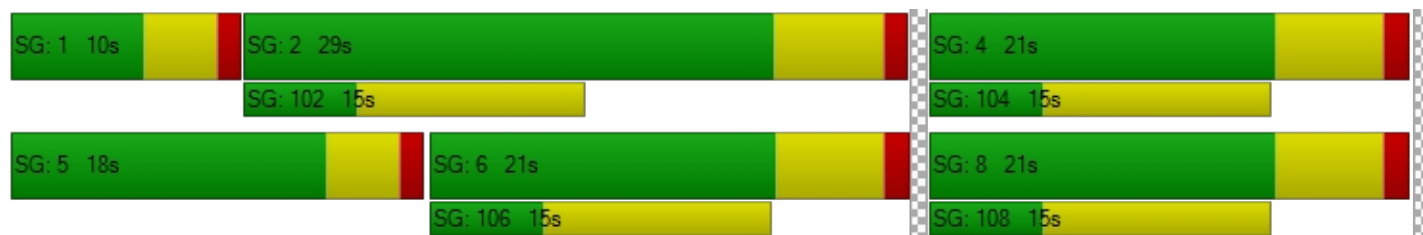


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.19	13.62	14.72	26.22	21.61	9.68	28.34	17.72	17.94	23.67	17.94	18.20
Movement LOS	C	B	B	C	C	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	15.26			21.69			20.15			18.70		
Approach LOS	B			C			C			B		
d_I, Intersection Delay [s/veh]	19.19											
Intersection LOS	B											
Intersection V/C	0.672											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.477

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	51	423	11	94	380	92	153	207	44	9	181	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	182	0	0	123	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	605	11	94	503	92	153	207	44	9	181	168
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	159	3	25	132	24	40	54	12	2	48	44
Total Analysis Volume [veh/h]	54	637	12	99	529	97	161	218	46	9	191	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	16	27	0	12	23	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	5	32	32	7	34	34	10	20	20	25	13	13
g / C, Green / Cycle	0.08	0.46	0.46	0.10	0.48	0.48	0.14	0.29	0.29	0.36	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.03	0.19	0.19	0.06	0.19	0.19	0.10	0.08	0.08	0.01	0.11	0.12
s, saturation flow rate [veh/h]	1597	1676	1732	1597	1676	1653	1597	1676	1577	1097	1676	1425
c, Capacity [veh/h]	125	771	797	155	802	790	220	478	450	454	321	273
d1, Uniform Delay [s]	30.77	12.62	12.62	30.43	11.73	11.74	28.95	19.45	19.49	17.23	25.82	26.13
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.33	1.64	1.59	4.35	1.44	1.47	4.67	0.32	0.35	0.02	1.76	2.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.43	0.41	0.41	0.64	0.39	0.39	0.73	0.28	0.29	0.02	0.60	0.65
d, Delay for Lane Group [s/veh]	33.10	14.26	14.21	34.79	13.18	13.21	33.62	19.77	19.83	17.24	27.59	28.72
Lane Group LOS	C	B	B	C	B	B	C	B	B	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.88	3.08	3.17	1.67	2.87	2.84	2.69	1.59	1.53	0.09	2.83	2.70
50th-Percentile Queue Length [ft]	22.09	76.97	79.30	41.64	71.66	71.07	67.25	39.75	38.25	2.37	70.70	67.51
95th-Percentile Queue Length [veh]	1.59	5.54	5.71	3.00	5.16	5.12	4.84	2.86	2.75	0.17	5.09	4.86
95th-Percentile Queue Length [ft]	39.77	138.54	142.73	74.95	129.00	127.92	121.04	71.54	68.84	4.26	127.26	121.52

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.10	14.23	14.21	34.79	13.19	13.21	33.62	19.80	19.83	17.24	27.59	28.72
Movement LOS	C	B	B	C	B	B	C	B	B	B	C	C
d_A, Approach Delay [s/veh]	15.68			16.14			25.04			27.87		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.67											
Intersection LOS	B											
Intersection V/C	0.477											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	7.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	73	1127	11	49	434	11	19	2	13	22	8	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	790	0	0	662	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	1917	11	49	1096	11	19	2	13	22	8	87
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	504	3	13	288	3	5	1	3	6	2	23
Total Analysis Volume [veh/h]	77	2018	12	52	1154	12	20	2	14	23	8	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	10	21	0	0	29	0	0	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	42	42	5	41	41	7	7	7	7
g / C, Green / Cycle	0.10	0.70	0.70	0.09	0.69	0.69	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.42	0.42	0.03	0.24	0.24	0.02	0.01	0.02	0.07
s, saturation flow rate [veh/h]	1597	3192	1671	1597	3192	1668	1161	1510	1252	1442
c, Capacity [veh/h]	155	2235	1170	136	2198	1148	168	173	239	165
d1, Uniform Delay [s]	25.69	4.62	4.63	25.94	3.83	3.83	28.07	23.78	25.05	25.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.44	1.18	2.24	1.75	0.44	0.84	0.31	0.23	0.17	3.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.50	0.60	0.60	0.38	0.35	0.35	0.12	0.09	0.10	0.61
d, Delay for Lane Group [s/veh]	28.13	5.80	6.87	27.69	4.27	4.67	28.38	24.01	25.22	28.85
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.05	2.24	2.69	0.71	1.06	1.23	0.27	0.20	0.29	1.39
50th-Percentile Queue Length [ft]	26.32	55.95	67.28	17.66	26.46	30.83	6.81	4.90	7.18	34.81
95th-Percentile Queue Length [veh]	1.89	4.03	4.84	1.27	1.90	2.22	0.49	0.35	0.52	2.51
95th-Percentile Queue Length [ft]	47.37	100.70	121.11	31.79	47.62	55.49	12.25	8.82	12.93	62.66

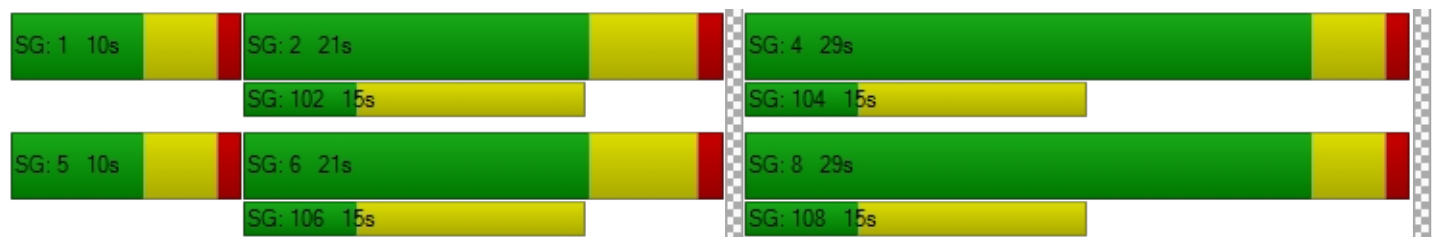


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.13	6.17	6.87	27.69	4.40	4.67	28.38	24.01	24.01	25.22	28.85	28.85
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	6.97			5.40			26.44			28.17		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.37											
Intersection LOS	A											
Intersection V/C	0.519											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	25.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	52	667	145	140	766	114	110	287	41	139	462	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	12	151	0	0	635	1	0	163	47	0	172	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	818	145	140	1401	115	110	450	88	139	634	90
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	215	38	37	369	30	29	118	23	37	167	24
Total Analysis Volume [veh/h]	67	861	153	147	1475	121	116	474	93	146	667	95
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	12	23	16	16	25	0	12	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	21	21	8	23	33	7	24	8	26	26
g / C, Green / Cycle	0.08	0.30	0.30	0.12	0.33	0.47	0.10	0.35	0.12	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.10	0.08	0.29	0.08	0.07	0.30	0.08	0.20	0.20
s, saturation flow rate [veh/h]	1774	5074	1583	1774	5074	1583	1774	1883	1774	1863	1855
c, Capacity [veh/h]	149	1504	469	214	1689	689	187	657	213	677	675
d1, Uniform Delay [s]	30.52	20.87	19.18	29.52	21.96	12.09	29.98	21.23	29.54	17.83	17.83
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.23	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	1.59	1.84	3.90	6.57	0.12	3.36	7.19	3.89	0.74	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.45	0.57	0.33	0.69	0.87	0.18	0.62	0.86	0.69	0.56	0.56
d, Delay for Lane Group [s/veh]	32.64	22.46	21.03	33.42	28.53	12.21	33.34	28.42	33.44	18.56	18.57
Lane Group LOS	C	C	C	C	C	B	C	C	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.10	3.80	1.99	2.44	7.71	1.03	1.92	8.87	2.42	4.47	4.45
50th-Percentile Queue Length [ft]	27.40	94.94	49.82	60.95	192.63	25.64	48.02	221.74	60.55	111.74	111.34
95th-Percentile Queue Length [veh]	1.97	6.84	3.59	4.39	12.26	1.85	3.46	13.75	4.36	7.94	7.91
95th-Percentile Queue Length [ft]	49.31	170.89	89.67	109.70	306.44	46.16	86.43	343.85	108.99	198.42	197.87

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.64	22.46	21.03	33.42	28.53	12.21	33.34	28.42	28.42	33.44	18.57	18.57
Movement LOS	C	C	C	C	C	B	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	22.89			27.81			29.26			20.96		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.42											
Intersection LOS	C											
Intersection V/C	0.712											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	16.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.292

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵↻			↵			↵↻		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	37	208	0	0	214	156	106	0	18	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	13	0	18	33	0	0	164	0	0	174	31
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	221	0	18	247	156	106	164	18	0	174	31
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	58	0	5	65	41	28	43	5	0	46	8
Total Analysis Volume [veh/h]	39	233	0	19	260	164	112	173	19	0	183	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	21	0	18	29	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	16	16	16	16	16	7	36	2	31	31
g / C, Green / Cycle	0.27	0.27	0.27	0.27	0.27	0.11	0.59	0.04	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.04	0.14	0.02	0.16	0.12	0.07	0.12	0.00	0.07	0.07
s, saturation flow rate [veh/h]	1003	1676	1028	1676	1425	1597	1648	1597	1676	1590
c, Capacity [veh/h]	235	452	255	452	384	176	978	59	873	828
d1, Uniform Delay [s]	24.47	18.60	23.08	18.95	18.10	25.55	5.61	0.00	7.38	7.39
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	0.91	0.12	1.16	0.75	3.80	0.45	0.00	0.29	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.17	0.52	0.07	0.58	0.43	0.64	0.20	0.00	0.13	0.13
d, Delay for Lane Group [s/veh]	24.80	19.51	23.21	20.11	18.85	29.36	6.06	0.00	7.67	7.72
Lane Group LOS	C	B	C	C	B	C	A	A	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.48	2.50	0.22	2.86	1.72	1.57	0.87	0.00	0.62	0.61
50th-Percentile Queue Length [ft]	12.10	62.55	5.60	71.51	42.88	39.27	21.79	0.00	15.40	15.21
95th-Percentile Queue Length [veh]	0.87	4.50	0.40	5.15	3.09	2.83	1.57	0.00	1.11	1.10
95th-Percentile Queue Length [ft]	21.79	112.59	10.09	128.72	77.19	70.68	39.23	0.00	27.73	27.39

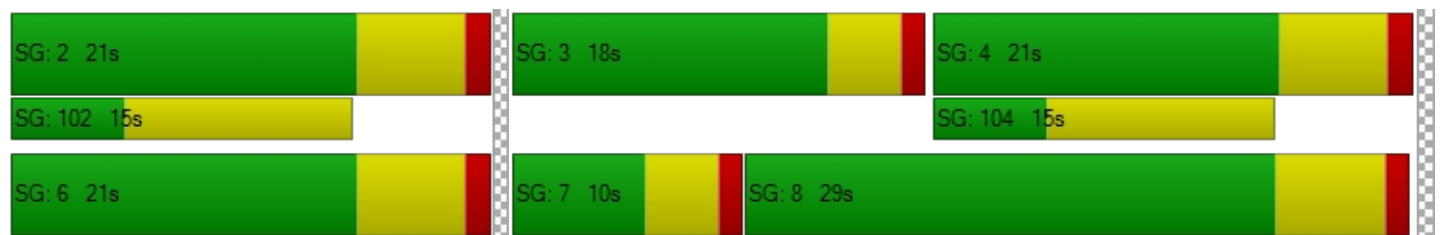


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.80	19.51	19.51	23.21	20.11	18.85	29.36	6.06	6.06	0.00	7.69	7.72
Movement LOS	C	B	B	C	C	B	C	A	A	A	A	A
d_A, Approach Delay [s/veh]	20.27			19.78			14.64			7.69		
Approach LOS	C			B			B			A		
d_I, Intersection Delay [s/veh]	16.51											
Intersection LOS	B											
Intersection V/C	0.292											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	793	58	78	245	0	0	0	0	57	0	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	45	725	95	47	730	58	136	238	77	47	91	32
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	1518	153	125	975	58	136	238	77	104	91	181
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	399	40	33	257	15	36	63	20	27	24	48
Total Analysis Volume [veh/h]	47	1598	161	132	1026	61	143	251	81	109	96	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	3.6
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	22	0	10	22	0	16	21	0	17	22	10
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	36	36	8	39	39	9	11	11	7	9	19
g / C, Green / Cycle	0.08	0.52	0.52	0.11	0.55	0.55	0.13	0.15	0.15	0.10	0.13	0.27
(v / s)_i Volume / Saturation Flow Rate	0.02	0.37	0.37	0.04	0.23	0.23	0.09	0.08	0.05	0.07	0.03	0.13
s, saturation flow rate [veh/h]	3101	3192	1599	3101	3192	1629	1597	3192	1482	1597	3192	1425
c, Capacity [veh/h]	249	1650	827	354	1759	897	203	482	224	165	407	332
d1, Uniform Delay [s]	30.07	12.90	12.92	28.68	9.11	9.11	29.29	27.39	26.69	30.18	27.48	23.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	2.61	5.17	0.65	0.71	1.38	4.41	0.87	0.98	4.41	0.30	1.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.19	0.71	0.71	0.37	0.41	0.41	0.70	0.52	0.36	0.66	0.24	0.58
d, Delay for Lane Group [s/veh]	30.43	15.52	18.09	29.33	9.82	10.50	33.70	28.26	27.68	34.59	27.77	25.34
Lane Group LOS	C	B	B	C	A	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.36	6.19	6.81	0.99	2.67	2.90	2.39	1.85	1.19	1.85	0.69	2.70
50th-Percentile Queue Length [ft]	8.99	154.63	170.16	24.73	66.75	72.40	59.77	46.35	29.76	46.29	17.29	67.51
95th-Percentile Queue Length [veh]	0.65	10.26	11.08	1.78	4.81	5.21	4.30	3.34	2.14	3.33	1.25	4.86
95th-Percentile Queue Length [ft]	16.19	256.59	277.12	44.51	120.14	130.31	107.59	83.43	53.58	83.33	31.13	121.52

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.43	16.20	18.09	29.33	10.02	10.50	33.70	28.26	27.68	34.59	27.77	25.34
Movement LOS	C	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.74			12.14			29.80			28.48		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.09											
Intersection LOS	B											
Intersection V/C	0.622											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	50.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.995

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	783	108	29	852	64	82	127	48	71	136	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	19	163	0	0	682	0	0	237	22	0	263	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	946	108	29	1534	64	82	364	70	71	399	26
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	249	28	8	404	17	22	96	18	19	105	7
Total Analysis Volume [veh/h]	71	996	114	31	1615	67	86	383	74	75	420	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	22	0	20	32	0	0	28	0	0	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	33	33	5	32	32	26	26	26	26
g / C, Green / Cycle	0.09	0.48	0.48	0.06	0.46	0.46	0.37	0.37	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.04	0.31	0.08	0.02	0.51	0.05	0.10	0.23	0.05	0.44
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	845	1676	1425	1175
c, Capacity [veh/h]	136	1524	681	104	1461	652	103	623	529	495
d1, Uniform Delay [s]	30.66	13.88	10.38	31.19	18.98	10.80	35.00	17.92	14.59	23.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.48
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.09	2.19	0.53	1.57	57.98	0.32	15.45	0.99	0.12	54.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.65	0.17	0.30	1.11	0.10	0.83	0.62	0.14	1.05
d, Delay for Lane Group [s/veh]	33.74	16.08	10.91	32.76	76.96	11.12	50.45	18.92	14.71	78.24
Lane Group LOS	C	B	B	C	F	B	D	B	B	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.19	5.39	0.94	0.52	21.47	0.56	1.83	4.58	0.71	15.22
50th-Percentile Queue Length [ft]	29.76	134.78	23.59	12.88	536.76	14.09	45.72	114.55	17.78	380.47
95th-Percentile Queue Length [veh]	2.14	9.20	1.70	0.93	31.20	1.01	3.29	8.09	1.28	22.37
95th-Percentile Queue Length [ft]	53.57	229.98	42.47	23.18	779.98	25.37	82.30	202.31	32.00	559.37

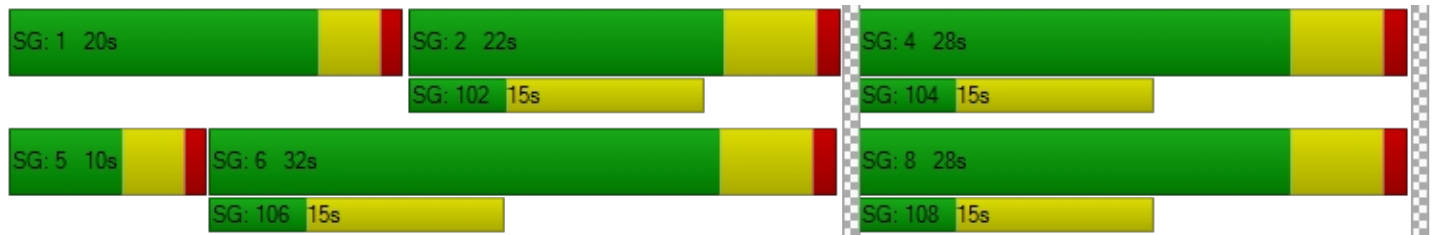


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.74	16.08	10.91	32.76	76.96	11.12	50.45	18.92	14.71	78.24	78.24	78.24
Movement LOS	C	B	B	C	F	B	D	B	B	E	E	E
d_A, Approach Delay [s/veh]	16.64			73.58			23.34			78.24		
Approach LOS	B			E			C			E		
d_I, Intersection Delay [s/veh]	50.32											
Intersection LOS	D											
Intersection V/C	0.995											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type: All-way stop  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 42.1  
 Level Of Service: E  
 Volume to Capacity (v/c): 0.900

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	243	5	28	215	24	56	50	20	7	48	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	13	6	0	33	0	0	245	0	13	268	0
Total Hourly Volume [veh/h]	49	256	11	28	248	24	56	295	20	20	316	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	67	3	7	65	6	15	78	5	5	83	4
Total Analysis Volume [veh/h]	52	269	12	29	261	25	59	311	21	21	333	15
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	421	418	435	431
Degree of Utilization, x	0.79	0.75	0.90	0.86

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	6.98	6.20	9.68	8.52
95th-Percentile Queue Length [ft]	174.52	154.97	242.09	213.12
Approach Delay [s/veh]	37.22	33.63	50.84	44.42
Approach LOS	E	D	F	E
Intersection Delay [s/veh]	42.08			
Intersection LOS	E			

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**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	220.00	100.00	970.00	200.00	100.00	100.00	30.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	1	950	16	30	401	3	10	3	0	37	4	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	82	709	66	28	682	31	59	141	101	23	85	79
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	1659	82	58	1083	34	69	144	101	60	89	162
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	437	22	15	285	9	18	38	27	16	23	43
Total Analysis Volume [veh/h]	87	1746	86	61	1140	36	73	152	106	63	94	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	22	0	10	21	0	17	27	0	11	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	37	37	6	36	36	6	13	13	6	13	13
g / C, Green / Cycle	0.10	0.53	0.53	0.09	0.52	0.52	0.09	0.19	0.19	0.08	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.05	0.38	0.38	0.04	0.35	0.35	0.05	0.05	0.07	0.04	0.06	0.12
s, saturation flow rate [veh/h]	1597	3192	1637	1597	1676	1658	1597	3192	1482	1597	1676	1425
c, Capacity [veh/h]	153	1677	860	139	866	857	138	610	283	131	313	266
d1, Uniform Delay [s]	30.27	12.70	12.72	30.34	12.63	12.63	30.60	24.05	24.67	30.69	24.52	26.30
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.31	2.72	5.25	2.18	4.33	4.39	3.10	0.21	0.82	2.70	0.53	2.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.72	0.72	0.44	0.68	0.68	0.53	0.25	0.37	0.48	0.30	0.64
d, Delay for Lane Group [s/veh]	33.58	15.42	17.97	32.51	16.96	17.02	33.70	24.26	25.48	33.39	25.06	28.89
Lane Group LOS	C	B	B	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.45	6.36	7.15	1.00	6.56	6.51	1.22	1.01	1.48	1.05	1.29	2.62
50th-Percentile Queue Length [ft]	36.29	159.02	178.71	24.96	163.98	162.71	30.58	25.18	37.00	26.26	32.22	65.39
95th-Percentile Queue Length [veh]	2.61	10.50	11.53	1.80	10.76	10.69	2.20	1.81	2.66	1.89	2.32	4.71
95th-Percentile Queue Length [ft]	65.32	262.42	288.33	44.92	268.98	267.31	55.04	45.33	66.60	47.26	58.00	117.71

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.58	16.20	17.97	32.51	16.98	17.02	33.70	24.26	25.48	33.39	25.06	28.89
Movement LOS	C	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	17.07			17.75			26.73			28.66		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.12											
Intersection LOS	B											
Intersection V/C	0.584											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.794

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	185.00	100.00	50.00	165.00	100.00	165.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	98	775	10	13	831	144	155	52	66	30	145	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	24	180	0	0	704	0	0	6	30	0	14	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	955	10	13	1535	144	155	58	96	30	159	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	251	3	3	404	38	41	15	25	8	42	2
Total Analysis Volume [veh/h]	128	1005	11	14	1616	152	163	61	101	32	167	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	47	0	10	26	0	16	21	0	32	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	12	68	68	4	60	60	14	25	25	5	16
g / C, Green / Cycle	0.11	0.62	0.62	0.04	0.55	0.55	0.13	0.22	0.22	0.05	0.15
(v / s)_i Volume / Saturation Flow Rate	0.08	0.31	0.01	0.01	0.51	0.11	0.10	0.04	0.07	0.02	0.11
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1482	1597	1663
c, Capacity [veh/h]	172	1969	879	58	1741	777	203	376	332	80	244
d1, Uniform Delay [s]	47.60	11.78	8.13	51.55	23.03	12.73	46.65	34.36	35.53	50.64	44.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.23	0.95	0.03	2.15	10.19	0.56	7.18	0.20	0.51	3.20	3.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.74	0.51	0.01	0.24	0.93	0.20	0.80	0.16	0.30	0.40	0.72
d, Delay for Lane Group [s/veh]	53.83	12.73	8.16	53.70	33.23	13.29	53.83	34.56	36.04	53.84	48.62
Lane Group LOS	D	B	A	D	C	B	D	C	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.63	6.39	0.10	0.40	19.71	1.91	4.64	1.31	2.25	0.91	4.71
50th-Percentile Queue Length [ft]	90.71	159.64	2.47	10.08	492.67	47.85	116.01	32.73	56.33	22.77	117.78
95th-Percentile Queue Length [veh]	6.53	10.53	0.18	0.73	26.99	3.45	8.17	2.36	4.06	1.64	8.27
95th-Percentile Queue Length [ft]	163.28	263.25	4.45	18.15	674.68	86.14	204.32	58.92	101.39	40.99	206.78

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	53.83	12.73	8.16	53.70	33.23	13.29	53.83	34.56	36.04	53.84	48.62	48.62
Movement LOS	D	B	A	D	C	B	D	C	D	D	D	D
d_A, Approach Delay [s/veh]	17.28			31.69			44.69			49.43		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	29.21											
Intersection LOS	C											
Intersection V/C	0.794											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	All-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.475

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	65	219	6	21	175	44	34	14	16	7	42	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	10	19	0	1	45	0	0	6	0	0	13	0
Total Hourly Volume [veh/h]	75	238	6	22	220	44	34	20	16	7	55	22
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	63	2	6	58	12	9	5	4	2	14	6
Total Analysis Volume [veh/h]	79	251	6	23	232	46	36	21	17	7	58	23
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	707	716	608	622
Degree of Utilization, x	0.48	0.42	0.12	0.14

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	2.57	2.09	0.41	0.49
95th-Percentile Queue Length [ft]	64.35	52.34	10.32	12.27
Approach Delay [s/veh]	12.62	11.63	9.74	9.74
Approach LOS	B	B	A	A
Intersection Delay [s/veh]	11.66			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	524	1	323	0	660	194	44	1188	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	189	0	0	318	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	524	1	323	0	849	194	44	1506	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	0	85	0	223	51	12	396	0	0	0	0
Total Analysis Volume [veh/h]	552	1	340	0	894	204	46	1585	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	0	20	0	19	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	30	30	5	37
g / C, Green / Cycle	0.32	0.32	0.32	0.50	0.50	0.08	0.62
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	0.27	0.26	0.27	0.02	0.39
s, saturation flow rate [veh/h]	1416	1416	1264	2831	1354	2750	4050
c, Capacity [veh/h]	448	449	400	1412	675	232	2498
d1, Uniform Delay [s]	17.41	17.41	19.16	10.16	10.32	25.58	7.24
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.38	1.38	5.25	1.36	3.11	0.41	1.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.62	0.62	0.85	0.52	0.54	0.20	0.63
d, Delay for Lane Group [s/veh]	18.79	18.79	24.42	11.52	13.43	25.99	8.48
Lane Group LOS	B	B	C	B	B	C	A
Critical Lane Group	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.94	2.94	4.33	2.73	3.08	0.29	2.94
50th-Percentile Queue Length [ft]	73.46	73.46	108.22	68.23	77.12	7.32	73.39
95th-Percentile Queue Length [veh]	5.29	5.29	7.74	4.91	5.55	0.53	5.28
95th-Percentile Queue Length [ft]	132.23	132.23	193.52	122.82	138.81	13.18	132.10

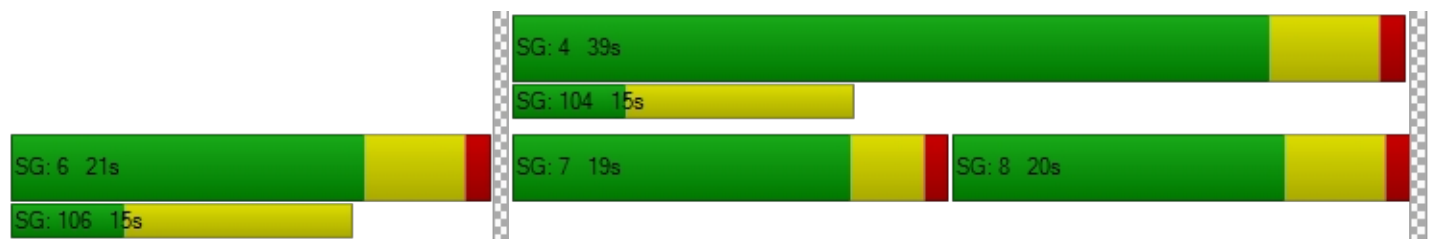


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	18.79	18.79	24.42	0.00	11.87	13.43	25.99	8.48	0.00	0.00	0.00	0.00
Movement LOS	B	B	C		B	B	C	A				
d_A, Approach Delay [s/veh]	20.93			12.16			8.98			0.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	12.89											
Intersection LOS	B											
Intersection V/C	0.660											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	59.8
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.936

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Base Volume Input [veh/h]	417	68	48	29	0	441	196	815	177	0	914	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	189	0	0	318	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	417	68	48	29	0	441	196	1004	177	0	1232	20
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	18	13	8	0	116	52	264	47	0	324	5
Total Analysis Volume [veh/h]	439	72	51	31	0	464	206	1057	186	0	1297	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	26	0	12	12	33	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No			No	No			No	
Maximum Recall		No		No			No	No			No	
Pedestrian Recall		No		No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	18	18	18	25	25	10	31	19	19
g / C, Green / Cycle	0.23	0.23	0.23	0.31	0.31	0.13	0.39	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.04	0.02	0.37	0.15	0.26	0.24	0.22
s, saturation flow rate [veh/h]	1416	1435	1264	1416	1264	1416	4050	4050	1470
c, Capacity [veh/h]	321	326	287	436	389	183	1579	955	347
d1, Uniform Delay [s]	29.13	29.13	24.91	19.57	27.67	34.83	20.14	30.57	30.12
k, delay calibration	0.11	0.11	0.11	0.11	0.44	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.35	4.29	0.29	0.07	106.37	71.40	2.27	38.69	37.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

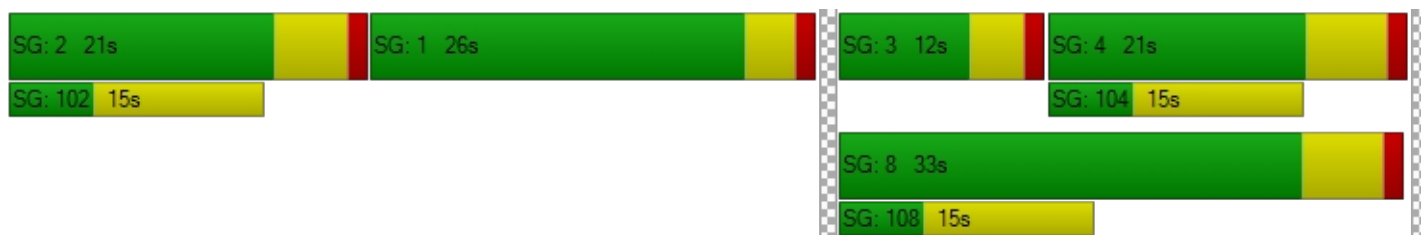
X, volume / capacity	0.79	0.79	0.18	0.07	1.19	1.13	0.67	1.04	0.95
d, Delay for Lane Group [s/veh]	33.48	33.42	25.21	19.64	134.04	106.23	22.41	69.27	67.48
Lane Group LOS	C	C	C	B	F	F	C	F	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	4.67	4.73	0.76	0.39	18.27	7.00	5.21	9.10	9.39
50th-Percentile Queue Length [ft]	116.77	118.16	18.98	9.72	456.74	175.05	130.37	227.57	234.83
95th-Percentile Queue Length [veh]	8.21	8.29	1.37	0.70	27.94	11.87	8.96	14.31	14.42
95th-Percentile Queue Length [ft]	205.37	207.30	34.17	17.50	698.59	296.84	224.00	357.82	360.49

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.46	33.42	25.21	19.64	0.00	134.04	106.23	22.41	0.00	0.00	68.84	67.48
Movement LOS	C	C	C	B		F	F	C			E	E
d_A, Approach Delay [s/veh]	32.70			126.88			36.08			68.82		
Approach LOS	C			F			D			E		
d_I, Intersection Delay [s/veh]	59.78											
Intersection LOS	E											
Intersection V/C	0.936											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.655

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	52	341	47	43	395	81	72	582	72	35	736	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	189	0	0	318	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	341	47	43	395	81	72	771	72	35	1054	35
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	90	12	11	104	21	19	203	19	9	277	9
Total Analysis Volume [veh/h]	55	359	49	45	416	85	76	812	76	37	1109	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	18	29	10	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	17	17	5	17	17	6	35	42	5	34	34
g / C, Green / Cycle	0.08	0.24	0.24	0.07	0.24	0.24	0.09	0.50	0.61	0.07	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.04	0.13	0.04	0.03	0.17	0.17	0.05	0.29	0.03	0.03	0.39	0.39
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1401	1416	2831	2237	1416	1487	1470
c, Capacity [veh/h]	112	691	309	104	355	335	126	1413	1287	97	712	704
d1, Uniform Delay [s]	30.89	22.90	20.80	31.02	24.50	24.56	30.71	12.31	6.54	31.16	15.50	15.51
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.33	0.61	0.24	2.79	2.78	3.07	4.61	1.71	0.02	2.42	9.61	9.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.49	0.52	0.16	0.43	0.72	0.73	0.60	0.57	0.06	0.38	0.81	0.81
d, Delay for Lane Group [s/veh]	34.22	23.51	21.04	33.81	27.28	27.62	35.32	14.02	6.56	33.59	25.11	25.24
Lane Group LOS	C	C	C	C	C	C	D	B	A	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.94	2.39	0.60	0.76	3.83	3.68	1.32	3.97	0.20	0.63	8.26	8.20
50th-Percentile Queue Length [ft]	23.43	59.83	14.99	19.08	95.70	91.97	32.94	99.31	4.92	15.67	206.58	204.97
95th-Percentile Queue Length [veh]	1.69	4.31	1.08	1.37	6.89	6.62	2.37	7.15	0.35	1.13	12.98	12.89
95th-Percentile Queue Length [ft]	42.18	107.70	26.97	34.34	172.26	165.55	59.29	178.76	8.86	28.21	324.44	322.37



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.22	23.51	21.04	33.81	27.41	27.62	35.32	14.02	6.56	33.59	25.17	25.24
Movement LOS	C	C	C	C	C	C	D	B	A	C	C	C
d_A, Approach Delay [s/veh]	24.52			27.97			15.11			25.44		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	22.59											
Intersection LOS	C											
Intersection V/C	0.655											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	62	635	227	26	707	302	114	316	32	162	603	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	189	0	0	318	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	635	227	26	707	302	114	505	32	162	921	53
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	167	60	7	186	79	30	133	8	43	242	14
Total Analysis Volume [veh/h]	65	668	239	27	744	318	120	532	34	171	969	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	11	29	0	10	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	23	23	4	21	21	8	28	28	7	27	27
g / C, Green / Cycle	0.08	0.32	0.32	0.06	0.30	0.30	0.12	0.40	0.40	0.10	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.19	0.02	0.26	0.25	0.08	0.19	0.19	0.06	0.34	0.04
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1456	2750	2831	1264
c, Capacity [veh/h]	117	914	408	86	852	381	167	593	580	284	1086	485
d1, Uniform Delay [s]	30.85	21.00	19.78	31.46	23.19	22.85	29.73	15.67	15.68	30.02	20.22	13.92
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.15	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.03	1.14	1.34	2.03	2.98	6.52	5.63	2.79	2.86	2.06	11.18	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.55	0.73	0.59	0.31	0.87	0.84	0.72	0.48	0.48	0.60	0.89	0.12
d, Delay for Lane Group [s/veh]	34.88	22.14	21.12	33.49	26.17	29.37	35.36	18.47	18.54	32.07	31.40	14.40
Lane Group LOS	C	C	C	C	C	C	D	B	B	C	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.12	4.43	3.04	0.46	5.52	5.04	2.07	3.42	3.37	1.37	8.07	0.57
50th-Percentile Queue Length [ft]	27.97	110.82	76.06	11.49	137.94	125.97	51.81	85.51	84.16	34.17	201.66	14.32
95th-Percentile Queue Length [veh]	2.01	7.89	5.48	0.83	9.37	8.72	3.73	6.16	6.06	2.46	12.72	1.03
95th-Percentile Queue Length [ft]	50.35	197.14	136.91	20.68	234.25	218.00	93.26	153.92	151.49	61.50	318.11	25.78

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.88	22.14	21.12	33.49	26.17	29.37	35.36	18.50	18.54	32.07	31.40	14.40
Movement LOS	C	C	C	C	C	C	D	B	B	C	C	B
d_A, Approach Delay [s/veh]	22.74			27.29			21.45			30.70		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.19											
Intersection LOS	C											
Intersection V/C	0.736											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.533

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	180.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	24	131	60	57	73	77	73	294	22	47	605	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	189	0	0	318	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	131	60	57	73	77	73	483	22	47	923	81
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	34	16	15	19	20	19	127	6	12	243	21
Total Analysis Volume [veh/h]	25	138	63	60	77	81	77	508	23	49	972	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	18	29	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	11	11	6	13	13	6	40	40	5	39	39
g / C, Green / Cycle	0.06	0.16	0.16	0.08	0.18	0.18	0.09	0.57	0.57	0.08	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.05	0.04	0.05	0.06	0.05	0.12	0.12	0.03	0.34	0.07
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1454	1416	2831	1264
c, Capacity [veh/h]	84	234	199	115	266	226	125	1618	831	107	1583	707
d1, Uniform Delay [s]	31.52	27.38	26.14	30.88	24.87	25.20	30.79	7.33	7.34	30.98	10.35	7.29
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.95	2.35	0.90	3.67	0.59	0.95	4.91	0.31	0.60	3.03	1.79	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	0.59	0.32	0.52	0.29	0.36	0.62	0.22	0.22	0.46	0.61	0.12
d, Delay for Lane Group [s/veh]	33.47	29.73	27.04	34.55	25.47	26.16	35.70	7.63	7.94	34.01	12.14	7.64
Lane Group LOS	C	C	C	C	C	C	D	A	A	C	B	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.43	2.14	0.91	1.03	1.07	1.15	1.34	1.06	1.17	0.83	4.25	0.54
50th-Percentile Queue Length [ft]	10.65	53.44	22.87	25.69	26.73	28.82	33.58	26.58	29.24	20.83	106.31	13.59
95th-Percentile Queue Length [veh]	0.77	3.85	1.65	1.85	1.92	2.08	2.42	1.91	2.11	1.50	7.63	0.98
95th-Percentile Queue Length [ft]	19.17	96.19	41.17	46.24	48.12	51.88	60.44	47.85	52.63	37.49	190.86	24.46



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.47	29.73	27.04	34.55	25.47	26.16	35.70	7.73	7.94	34.01	12.14	7.64
Movement LOS	C	C	C	C	C	C	D	A	A	C	B	A
d_A, Approach Delay [s/veh]	29.39			28.22			11.28			12.76		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.65											
Intersection LOS	B											
Intersection V/C	0.533											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	16.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	145	763	32	24	702	169	89	165	94	46	335	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	37	202	1	1	732	0	0	155	77	3	311	3
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	182	965	33	25	1434	169	89	320	171	49	646	47
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	254	9	7	377	44	23	84	45	13	170	12
Total Analysis Volume [veh/h]	192	1016	35	26	1509	178	94	337	180	52	680	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	26	0	11	27	0	0	23	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	29	29	4	26	26	21	21	21	21	21	21
g / C, Green / Cycle	0.12	0.48	0.48	0.07	0.43	0.43	0.35	0.35	0.35	0.35	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.06	0.22	0.02	0.02	0.33	0.12	0.14	0.20	0.13	0.06	0.22	0.22
s, saturation flow rate [veh/h]	3101	4567	1425	1597	4567	1425	651	1676	1425	935	1676	1637
c, Capacity [veh/h]	363	2198	686	110	1977	617	218	587	499	279	587	573
d1, Uniform Delay [s]	24.93	10.38	8.27	26.46	14.41	11.03	25.33	15.86	14.51	21.89	16.25	16.25
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.19	0.70	0.14	1.10	2.86	1.18	1.35	0.89	0.44	0.32	1.11	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.53	0.46	0.05	0.24	0.76	0.29	0.43	0.57	0.36	0.19	0.63	0.63
d, Delay for Lane Group [s/veh]	26.12	11.08	8.41	27.56	17.27	12.21	26.68	16.75	14.95	22.21	17.36	17.39
Lane Group LOS	C	B	A	C	B	B	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.22	2.44	0.22	0.36	5.11	1.44	1.27	3.31	1.61	0.60	3.72	3.65
50th-Percentile Queue Length [ft]	30.62	61.11	5.41	8.90	127.84	36.12	31.78	82.67	40.13	15.07	93.09	91.13
95th-Percentile Queue Length [veh]	2.20	4.40	0.39	0.64	8.82	2.60	2.29	5.95	2.89	1.09	6.70	6.56
95th-Percentile Queue Length [ft]	55.12	109.99	9.74	16.03	220.55	65.02	57.20	148.80	72.23	27.13	167.56	164.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.12	11.08	8.41	27.56	17.27	12.21	26.68	16.75	14.95	22.21	17.38	17.39
Movement LOS	C	B	A	C	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	13.33			16.90			17.75			17.70		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.14											
Intersection LOS	B											
Intersection V/C	0.612											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type: All-way stop  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 205.3  
 Level Of Service: F  
 Volume to Capacity (v/c): 1.779

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	21	166	22	35	115	22	32	163	9	47	389	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	18	6	1	45	0	0	174	0	11	354	2
Total Hourly Volume [veh/h]	21	184	28	36	160	22	32	337	9	58	743	73
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	48	7	9	42	6	8	89	2	15	196	19
Total Analysis Volume [veh/h]	22	194	29	38	168	23	34	355	9	61	782	77
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	457	451	500	920
Degree of Utilization, x	0.54	0.51	0.80	1.78

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	3.10	2.80	7.42	56.47
95th-Percentile Queue Length [ft]	77.58	70.07	185.38	1411.86
Approach Delay [s/veh]	19.61	18.88	32.82	375.85
Approach LOS	C	C	D	F
Intersection Delay [s/veh]	205.34			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	95.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.036

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	500.00	100.00	280.00	320.00	100.00	75.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	40.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	173	876	239	30	356	82	39	130	47	151	275	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	223	979	300	5	1130	51	113	180	218	378	282	16
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	396	1855	539	35	1486	133	152	310	265	529	557	66
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	104	488	142	9	391	35	40	82	70	139	147	17
Total Analysis Volume [veh/h]	417	1953	567	37	1564	140	160	326	279	557	586	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	61	24	10	55	0	10	25	16	24	39	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	14	61	61	6	53	53	8	23	23	22	37	37
g / C, Green / Cycle	0.12	0.51	0.51	0.05	0.44	0.44	0.07	0.19	0.19	0.18	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.13	0.61	0.40	0.02	0.49	0.10	0.05	0.10	0.19	0.18	0.35	0.05
s, saturation flow rate [veh/h]	3101	3192	1425	1597	3192	1425	3101	3192	1482	3101	1676	1425
c, Capacity [veh/h]	362	1616	721	83	1410	629	207	612	284	568	517	439
d1, Uniform Delay [s]	53.00	29.63	24.30	55.18	33.50	20.74	55.11	43.66	48.30	48.78	41.50	30.16
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.27	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	76.07	100.00	8.43	3.68	59.87	0.82	6.08	0.72	35.06	13.42	81.85	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

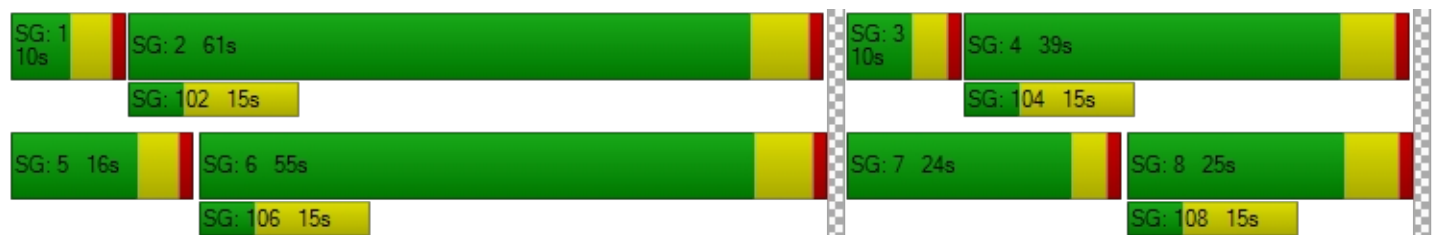
X, volume / capacity	1.15	1.21	0.79	0.44	1.11	0.22	0.77	0.53	0.98	0.98	1.13	0.16
d, Delay for Lane Group [s/veh]	129.07	129.63	32.73	58.86	93.37	21.56	61.19	44.39	83.36	62.20	123.35	30.33
Lane Group LOS	F	F	C	E	F	C	E	D	F	E	F	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	9.17	43.88	14.03	1.15	30.72	2.48	2.50	4.31	10.80	9.09	26.32	1.43
50th-Percentile Queue Length [ft]	229.19	1097.07	350.81	28.69	767.95	61.97	62.45	107.64	270.05	227.26	657.96	35.83
95th-Percentile Queue Length [veh]	14.94	62.83	20.18	2.07	42.92	4.46	4.50	7.71	16.19	14.04	37.56	2.58
95th-Percentile Queue Length [ft]	373.39	1570.83	504.39	51.63	1073.03	111.54	112.42	192.72	404.80	350.88	939.02	64.50

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	129.07	129.63	32.73	58.86	93.37	21.56	61.19	44.39	83.36	62.20	123.35	30.33
Movement LOS	F	F	C	E	F	C	E	D	F	E	F	C
d_A, Approach Delay [s/veh]	110.85			86.86			62.11			89.95		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	95.16											
Intersection LOS	F											
Intersection V/C	1.036											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	95.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.287

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	240.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	106	428	253	95	173	24	24	261	60	133	398	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	43	431	164	103	368	72	170	1254	2	384	821	58
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	859	417	198	541	96	194	1515	62	517	1219	232
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	226	110	52	142	25	51	399	16	136	321	61
Total Analysis Volume [veh/h]	157	904	439	208	569	101	204	1595	65	544	1283	244
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups			2,7									1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	21	13	13	21	0	46	33	0	13	31	13
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	11	19	32	11	19	19	44	31	31	11	0	11
g / C, Green / Cycle	0.14	0.24	0.40	0.14	0.24	0.24	0.55	0.39	0.39	0.14	0.00	0.14
(v / s)_i Volume / Saturation Flow Rate	0.41	0.28	0.31	0.28	0.21	0.21	0.53	0.50	0.05	0.18	0.40	0.17
s, saturation flow rate [veh/h]	386	3192	1425	750	1676	1590	386	3192	1425	3101	3192	1425
c, Capacity [veh/h]	135	758	531	178	398	378	285	1237	552	426	0	196
d1, Uniform Delay [s]	38.43	30.50	22.76	37.68	29.26	29.26	20.78	24.50	15.72	34.50	0.00	34.50
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.47	0.21	0.11	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	127.08	99.42	13.78	89.14	21.25	22.22	13.67	132.90	0.09	128.27	0.00	119.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.16	1.19	0.83	1.17	0.86	0.86	0.72	1.29	0.12	1.28	0.00	1.25
d, Delay for Lane Group [s/veh]	165.52	129.92	36.54	126.82	50.51	51.48	34.45	157.40	15.82	162.77	0.00	154.18
Lane Group LOS	F	F	D	F	D	D	C	F	B	F	A	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	7.37	17.23	8.76	3.91	8.24	7.91	4.41	33.20	0.71	11.51	0.00	10.11
50th-Percentile Queue Length [ft]	184.17	430.80	219.02	97.67	205.90	197.85	110.13	830.09	17.85	287.69	0.00	252.74
95th-Percentile Queue Length [veh]	12.53	26.35	13.61	7.03	12.94	12.53	7.85	49.87	1.29	18.78	0.00	16.70
95th-Percentile Queue Length [ft]	313.23	658.87	340.37	175.80	323.56	313.18	196.19	1246.64	32.13	469.61	0.00	417.50

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	165.52	129.92	36.54	126.82	50.89	51.48	34.45	157.40	15.82	162.77	0.00	154.18
Movement LOS	F	F	D	F	D	D	C	F	B	F	A	F
d_A, Approach Delay [s/veh]	106.32			68.95			139.00			60.92		
Approach LOS	F			E			F			E		
d_I, Intersection Delay [s/veh]	95.88											
Intersection LOS	F											
Intersection V/C	1.287											

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	47.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.984

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵↵		↑↑↑		↑↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	263	470	0	425	338	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	1241	0	1102	428	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	263	1711	0	1527	766	0
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	450	0	402	202	0
Total Analysis Volume [veh/h]	277	1801	0	1607	806	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.4	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	44	0	0	26	26	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C
C, Cycle Length [s]	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	42	42	42	24	24
g / C, Green / Cycle	0.60	0.60	0.60	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.17	0.63	0.63	0.35	0.25
s, saturation flow rate [veh/h]	1597	1425	1425	4567	3192
c, Capacity [veh/h]	958	855	855	1566	1094
d1, Uniform Delay [s]	6.78	14.00	14.00	23.00	20.22
k, delay calibration	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	45.75	45.75	29.72	4.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.29	1.05	1.05	1.03	0.74
d, Delay for Lane Group [s/veh]	6.94	59.75	59.75	52.72	24.65
Lane Group LOS	A	F	F	F	C
Critical Lane Group	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	1.68	21.33	21.33	12.17	6.01
50th-Percentile Queue Length [ft]	42.10	533.17	533.17	304.17	150.19
95th-Percentile Queue Length [veh]	3.03	30.13	30.13	18.18	10.03
95th-Percentile Queue Length [ft]	75.78	753.24	753.24	454.60	250.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	6.94	59.75	0.00	52.72	24.65	0.00
Movement LOS	A	F		F	C	
d_A, Approach Delay [s/veh]	52.71		52.72		24.65	
Approach LOS	D		D		C	
d_I, Intersection Delay [s/veh]	47.68					
Intersection LOS	D					
Intersection V/C	0.984					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.370

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	180	149	300	385	322	244
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	326	0	135	914	0	102
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	506	149	435	1299	322	346
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	133	39	114	342	85	91
Total Analysis Volume [veh/h]	533	157	458	1367	339	364
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	37	0	63	37	0	63
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	35	35	35	61	98	61	61
g / C, Green / Cycle	0.35	0.35	0.35	0.61	0.98	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.17	0.17	0.11	0.10	0.96	0.21	0.08
s, saturation flow rate [veh/h]	1597	1597	1425	4567	1425	1625	4567
c, Capacity [veh/h]	559	559	499	2786	1342	977	2786
d1, Uniform Delay [s]	25.36	25.36	23.74	8.45	2.90	12.39	8.26
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	0.63	0.36	0.13	29.26	0.98	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

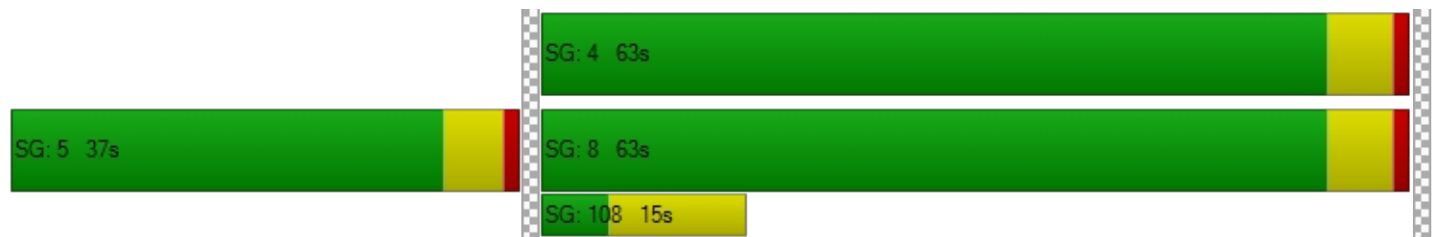
X, volume / capacity	0.48	0.48	0.31	0.16	1.02	0.35	0.13
d, Delay for Lane Group [s/veh]	25.99	25.99	24.10	8.58	32.16	13.37	8.36
Lane Group LOS	C	C	C	A	F	B	A
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	4.95	4.95	2.73	1.38	10.91	2.15	1.07
50th-Percentile Queue Length [ft]	123.79	123.79	68.16	34.54	272.78	53.74	26.83
95th-Percentile Queue Length [veh]	8.60	8.60	4.91	2.49	16.59	3.87	1.93
95th-Percentile Queue Length [ft]	215.02	215.02	122.69	62.17	414.82	96.74	48.29

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	25.99	24.10	8.58	32.16	13.37	8.36
Movement LOS	C	C	A	F	B	A
d_A, Approach Delay [s/veh]	25.56		26.24		10.78	
Approach LOS	C		C		B	
d_I, Intersection Delay [s/veh]	22.72					
Intersection LOS	C					
Intersection V/C	0.370					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.764

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	75.00	140.00	100.00	70.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	156	877	3	8	803	35	56	12	125	5	48	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	15	191	0	24	788	0	0	4	53	0	8	51
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	1068	3	32	1591	35	56	16	178	5	56	61
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	281	1	8	419	9	15	4	47	1	15	16
Total Analysis Volume [veh/h]	180	1124	3	34	1675	37	59	17	187	5	59	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	16	21	0	38	43	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	12	53	53	5	47	47	16	16	16	16	16
g / C, Green / Cycle	0.15	0.67	0.67	0.06	0.58	0.58	0.20	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.00	0.02	0.52	0.03	0.05	0.01	0.13	0.00	0.08
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1137	1676	1482	1251	1535
c, Capacity [veh/h]	235	2135	953	99	1863	832	214	325	288	304	298
d1, Uniform Delay [s]	32.79	6.78	4.40	35.95	14.58	7.12	33.49	26.25	29.73	27.59	28.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.16	0.93	0.01	2.03	7.39	0.10	0.69	0.07	2.47	0.02	0.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

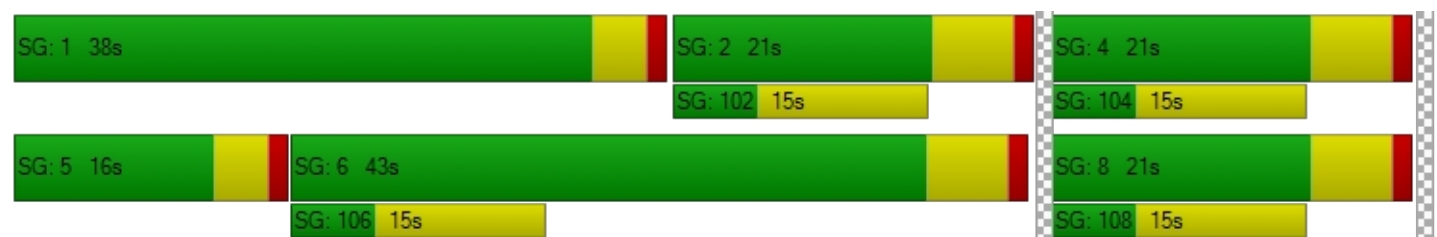
X, volume / capacity	0.77	0.53	0.00	0.34	0.90	0.04	0.28	0.05	0.65	0.02	0.41
d, Delay for Lane Group [s/veh]	37.95	7.71	4.40	37.98	21.98	7.22	34.18	26.31	32.20	27.61	29.16
Lane Group LOS	D	A	A	D	C	A	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.60	4.17	0.02	0.66	12.38	0.25	1.06	0.26	3.31	0.08	2.02
50th-Percentile Queue Length [ft]	89.92	104.21	0.38	16.61	309.45	6.22	26.60	6.39	82.76	1.93	50.51
95th-Percentile Queue Length [veh]	6.47	7.50	0.03	1.20	18.15	0.45	1.91	0.46	5.96	0.14	3.64
95th-Percentile Queue Length [ft]	161.86	187.57	0.68	29.90	453.69	11.20	47.87	11.51	148.97	3.48	90.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.95	7.71	4.40	37.98	21.98	7.22	34.18	26.31	32.20	27.61	29.16	29.16
Movement LOS	D	A	A	D	C	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	11.87			21.98			32.27			29.09		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	19.19											
Intersection LOS	B											
Intersection V/C	0.764											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.098

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	30	205	2	3	149	23	12	3	10	1	8	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	31	0	0	88	0	0	28	0	32	59	0
Total Hourly Volume [veh/h]	41	236	2	3	237	23	12	31	10	33	67	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	62	1	1	62	6	3	8	3	9	18	1
Total Analysis Volume [veh/h]	43	248	2	3	249	24	13	33	11	35	71	2
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.08	0.01	0.10	0.18	0.00
d_M, Delay for Movement [s/veh]	7.89	0.00	0.00	7.74	0.00	0.00	17.51	15.47	11.01	18.79	17.90	13.23
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh]	0.88	0.88	0.88	0.79	0.79	0.79	0.47	0.47	0.47	1.14	1.14	1.14
95th-Percentile Queue Length [ft]	21.88	21.88	21.88	19.79	19.79	19.79	11.85	11.85	11.85	28.62	28.62	28.62
d_A, Approach Delay [s/veh]	1.16			0.08			15.08			18.10		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.33											
Intersection LOS	C											

**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

**Intersection Setup**

Name	Eucalyptus Ave					
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↔		↗		↖	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Eucalyptus Ave					
Base Volume Input [veh/h]	14	1	3	10	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	60	0	0	70
Total Hourly Volume [veh/h]	14	1	63	10	0	73
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	17	3	0	19
Total Analysis Volume [veh/h]	15	1	66	11	0	77
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.51	8.85	0.00	0.00	7.49	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.06	0.06	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	1.49	1.49	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.47		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.89					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type: Signalized  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 74.0  
 Level Of Service: E  
 Volume to Capacity (v/c): 0.732

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	0	0	0	2	0	0
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	14	834	97	126	743	45	4	5	5	185	53	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	47	421	632	226	0	0	0	0	101	0	157
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	881	518	758	969	45	4	5	5	286	53	361
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	232	136	199	255	12	1	1	1	75	14	95
Total Analysis Volume [veh/h]	15	927	545	798	1020	47	4	5	5	301	56	380
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	9	27	0	24	42	0	0	9	0	0	64	24
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	L	C	R
C, Cycle Length [s]	63	63	63	63	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	0.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00
g_i, Effective Green Time [s]	3	27	27	22	45	45	5	0	0	22
g / C, Green / Cycle	0.05	0.42	0.42	0.35	0.72	0.72	0.08	0.00	0.00	0.35
(v / s)_i Volume / Saturation Flow Rate	0.01	0.20	0.38	0.34	0.22	0.22	0.01	0.81	0.03	0.27
s, saturation flow rate [veh/h]	1208	4567	1425	2346	3192	1639	1571	373	1676	1425
c, Capacity [veh/h]	166	1933	603	894	2290	1176	207	114	0	498
d1, Uniform Delay [s]	29.23	13.15	16.97	21.28	3.23	3.23	26.61	31.50	0.00	18.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	0.86	19.37	3.39	0.35	0.68	0.14	759.76	0.00	2.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

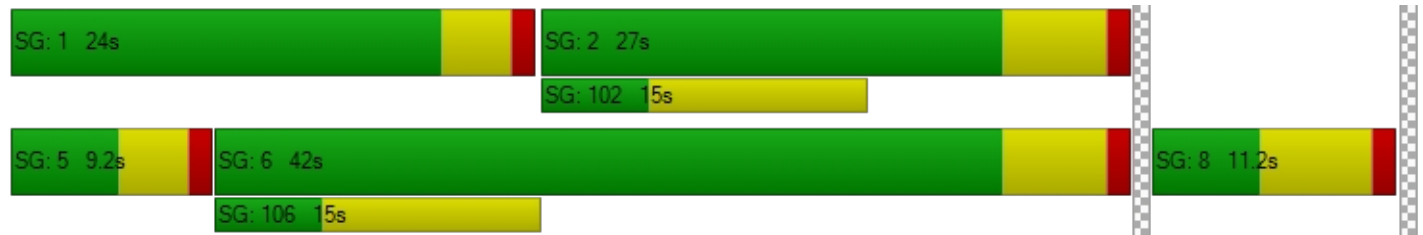
X, volume / capacity	0.09	0.48	0.90	0.89	0.31	0.31	0.07	2.63	0.00	0.76
d, Delay for Lane Group [s/veh]	29.46	14.01	36.34	24.67	3.58	3.91	26.75	791.26	0.00	21.10
Lane Group LOS	C	B	D	C	A	A	C	F	A	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.21	2.77	9.20	5.47	0.83	0.96	0.19	13.06	0.00	4.81
50th-Percentile Queue Length [ft]	5.37	69.24	230.03	136.73	20.70	24.00	4.67	326.49	0.00	120.21
95th-Percentile Queue Length [veh]	0.39	4.99	14.18	9.30	1.49	1.73	0.34	18.99	0.00	8.40
95th-Percentile Queue Length [ft]	9.66	124.64	354.40	232.61	37.26	43.21	8.41	474.66	0.00	210.11

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.46	14.01	36.34	24.67	3.68	3.91	26.75	26.75	26.75	791.26	0.00	21.10
Movement LOS	C	B	D	C	A	A	C	C	C	F	A	C
d_A, Approach Delay [s/veh]	22.35			12.67			26.75			334.04		
Approach LOS	C			B			C			F		
d_I, Intersection Delay [s/veh]	73.95											
Intersection LOS	E											
Intersection V/C	0.732											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type: All-way stop  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 119.1  
 Level Of Service: F  
 Volume to Capacity (v/c): 1.294

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Approach	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Lane Configuration	+			+			TTL			TTL		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Base Volume Input [veh/h]	0	0	0	71	0	84	52	119	0	0	379	177
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	6	0	90	13	26	11	1069	0	0	291	27
Total Hourly Volume [veh/h]	0	6	0	161	13	110	63	1188	0	0	670	204
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	42	3	29	17	313	0	0	176	54
Total Analysis Volume [veh/h]	0	6	0	169	14	116	66	1251	0	0	705	215
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	357	405	453	626	626	460	460
Degree of Utilization, x	0.02	0.74	0.15	1.29	1.29	1.07	1.03

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.05	5.89	0.51	26.59	26.59	15.26	14.05
95th-Percentile Queue Length [ft]	1.28	147.17	12.66	664.72	664.72	381.42	351.29
Approach Delay [s/veh]	13.26	33.29	161.76		86.57		
Approach LOS	B	D	F		F		
Intersection Delay [s/veh]	119.09						
Intersection LOS	F						

**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Two-way stop	Delay (sec / veh):	655.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.829

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	22	1	5	4	0	0	0	179	22	14	490	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	35	0	88	0	0	0	0	241	85	237	321	0
Total Hourly Volume [veh/h]	57	1	93	4	0	0	0	420	107	251	811	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	24	1	0	0	0	111	28	66	213	2
Total Analysis Volume [veh/h]	60	1	98	4	0	0	0	442	113	264	854	6
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	1.83	0.03	0.17	0.16	0.00	0.00	0.00	0.00	0.00	0.26	0.01	0.00
d_M, Delay for Movement [s/veh]	655.37	647.43	551.90	178.03	141.55	41.67	9.61	0.00	0.00	9.79	0.00	0.00
Movement LOS	F	F	F	F	F	E	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	14.26	14.26	14.26	0.49	0.49	0.49	0.00	0.00	0.00	28.41	28.41	28.41
95th-Percentile Queue Length [ft]	356.51	356.51	356.51	12.24	12.24	12.24	0.00	0.00	0.00	710.31	710.31	710.31
d_A, Approach Delay [s/veh]	591.55			178.03			0.00			2.30		
Approach LOS	F			F			A			F		
d_I, Intersection Delay [s/veh]	52.85											
Intersection LOS	F											

**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	1	0	0
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	70.00	100.00	70.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	335	1158	55	44	381	138	107	11	65	34	34	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	234	881	0	85	1360	450	157	48	102	0	98	44
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	569	2039	55	129	1741	588	264	59	167	34	132	109
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	150	537	14	34	458	155	69	16	44	9	35	29
Total Analysis Volume [veh/h]	599	2146	58	136	1833	619	278	62	176	36	139	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	56	0	10	43	13	13	14	0	20	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	21	60	60	8	47	60	11	19	5	13	13
g / C, Green / Cycle	0.21	0.60	0.60	0.08	0.47	0.60	0.11	0.19	0.05	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.19	0.47	0.04	0.04	0.40	0.43	0.09	0.02	0.02	0.08	0.08
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1597	1676	1437
c, Capacity [veh/h]	651	2744	856	239	2137	821	341	595	89	221	190
d1, Uniform Delay [s]	38.68	15.03	8.31	44.53	23.64	15.89	43.51	33.75	45.63	40.90	41.16
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.90	2.30	0.15	2.11	4.73	6.36	4.75	0.08	2.96	2.57	3.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.92	0.78	0.07	0.57	0.86	0.75	0.82	0.10	0.41	0.60	0.64
d, Delay for Lane Group [s/veh]	44.57	17.33	8.46	46.64	28.36	22.25	48.26	33.83	48.58	43.47	44.76
Lane Group LOS	D	B	A	D	C	C	D	C	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	7.44	11.03	0.50	1.66	12.60	10.68	3.49	0.61	0.92	3.14	2.96
50th-Percentile Queue Length [ft]	186.01	275.85	12.61	41.40	315.09	266.95	87.26	15.37	22.93	78.48	73.92
95th-Percentile Queue Length [veh]	11.91	16.48	0.91	2.98	18.43	16.04	6.28	1.11	1.65	5.65	5.32
95th-Percentile Queue Length [ft]	297.84	412.04	22.70	74.52	460.64	400.92	157.07	27.66	41.27	141.26	133.05

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.57	17.33	8.46	46.64	28.36	22.25	48.26	33.83	0.00	48.58	43.53	44.76
Movement LOS	D	B	A	D	C	C	D	C		D	D	D
d_A, Approach Delay [s/veh]	22.97			27.86			45.63			44.65		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	27.40											
Intersection LOS	C											
Intersection V/C	0.769											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	26.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	2	0	1	1
Pocket Length [ft]	100.00	350.00	250.00	100.00	200.00	200.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	651	118	154	311	260	901
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	715	145	346	881	310	433
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1366	263	500	1192	570	1334
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	359	69	132	314	150	351
Total Analysis Volume [veh/h]	1438	277	526	1255	600	1404
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	2	7	1	6	7	4
Auxiliary Signal Groups		2,7				1,4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	5.2	3.2	3.6	5.2	3.2	4.8
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	31	20	19	50	20	20
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	29	49	17	48	18	37
g / C, Green / Cycle	0.41	0.70	0.24	0.69	0.26	0.53
(v / s)_i Volume / Saturation Flow Rate	0.41	0.17	0.15	0.35	0.17	0.50
s, saturation flow rate [veh/h]	3547	1583	3445	3547	3445	2803
c, Capacity [veh/h]	1469	1059	837	2432	886	1377
d1, Uniform Delay [s]	20.20	4.66	23.68	5.35	23.39	17.80
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.92	0.60	0.78	0.79	0.92	18.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.98	0.26	0.63	0.52	0.68	1.02
d, Delay for Lane Group [s/veh]	39.12	5.26	24.46	6.14	24.30	36.09
Lane Group LOS	D	A	C	A	C	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	13.05	1.07	3.48	2.52	4.15	12.37
50th-Percentile Queue Length [ft]	326.18	26.68	87.08	62.93	103.68	309.24
95th-Percentile Queue Length [veh]	18.97	1.92	6.27	4.53	7.47	18.40
95th-Percentile Queue Length [ft]	474.27	48.02	156.75	113.27	186.63	459.89

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.12	5.26	24.46	6.14	24.30	36.09
Movement LOS	D	A	C	A	C	F
d_A, Approach Delay [s/veh]	33.65		11.55		32.56	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	26.10					
Intersection LOS	C					
Intersection V/C	0.639					

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	65.8
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.031

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	200.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	165	393	406	300	299	111	163	741	40	258	458	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	171	242	0	155	192	196	124	768	74	0	2162	61
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	336	635	406	455	491	307	287	1509	114	258	2620	132
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	167	107	120	129	81	76	397	30	68	689	35
Total Analysis Volume [veh/h]	354	668	427	479	517	323	302	1588	120	272	2758	139
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	17	21	26	20	24	14	14	53	17	26	65	20
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	15	19	45	18	22	36	12	51	68	24	63	83
g / C, Green / Cycle	0.13	0.16	0.37	0.15	0.18	0.30	0.10	0.43	0.57	0.20	0.53	0.69
(v / s)_i Volume / Saturation Flow Rate	0.11	0.15	0.30	0.15	0.11	0.23	0.10	0.35	0.08	0.09	0.60	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	388	723	503	465	837	401	310	1957	786	609	2398	960
d1, Uniform Delay [s]	51.86	49.79	35.85	51.00	45.13	40.03	53.84	30.04	13.16	42.47	28.50	7.09
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.38	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.66	19.31	16.20	27.53	3.40	12.39	18.31	0.85	0.09	0.51	68.88	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

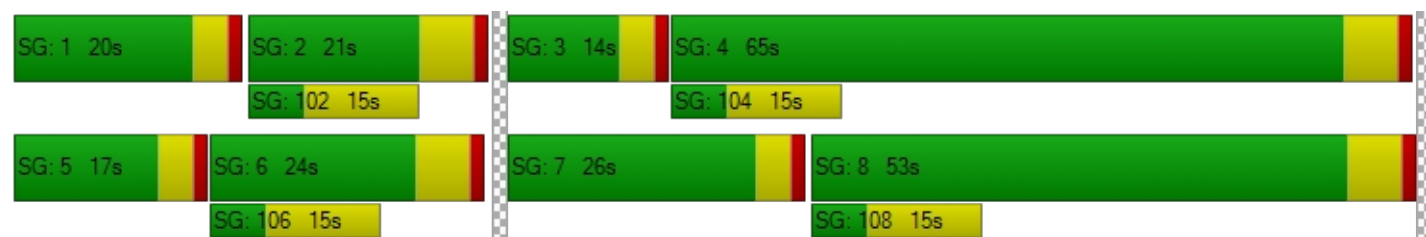
X, volume / capacity	0.91	0.92	0.85	1.03	0.62	0.80	0.97	0.81	0.15	0.45	1.15	0.14
d, Delay for Lane Group [s/veh]	60.51	69.10	52.05	78.53	48.53	52.42	72.16	30.88	13.25	42.98	97.38	7.16
Lane Group LOS	E	E	D	F	D	D	E	C	B	D	F	A
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	5.63	7.74	13.39	8.62	4.91	9.99	5.25	12.89	1.54	3.54	36.31	1.18
50th-Percentile Queue Length [ft]	140.67	193.50	334.70	215.42	122.64	249.70	131.23	322.17	38.42	88.55	907.85	29.53
95th-Percentile Queue Length [veh]	9.52	12.30	19.39	13.61	8.54	15.17	9.01	18.77	2.77	6.38	51.35	2.13
95th-Percentile Queue Length [ft]	237.93	307.56	484.72	340.28	213.44	379.28	225.16	469.35	69.15	159.39	1283.71	53.16

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	60.51	69.10	52.05	78.53	48.53	52.42	72.16	30.88	13.25	42.98	97.38	7.16
Movement LOS	E	E	D	F	D	D	E	C	B	D	F	A
d_A, Approach Delay [s/veh]	61.98			60.38			36.03			88.75		
Approach LOS	E			E			D			F		
d_I, Intersection Delay [s/veh]	65.83											
Intersection LOS	E											
Intersection V/C	1.031											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	287.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.836

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	152	0	393	0	994	478	557	578	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	2393	0	712	359	0	1438	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	152	0	2786	0	1706	837	557	2016	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	40	0	733	0	449	220	147	531	0
Total Analysis Volume [veh/h]	0	0	0	160	0	2933	0	1796	881	586	2122	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0	
Auxiliary Signal Groups													
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-	
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0	
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0	
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0	
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
Split [s]	0	0	0	0	65	0	0	41	0	14	55	0	
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0	
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0	
Rest In Walk					No			No			No		
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
Minimum Recall					No			No		No	No		
Maximum Recall					No			No		No	No		
Pedestrian Recall					No			No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		63	63	63	39	39	12	53
g / C, Green / Cycle		0.53	0.53	0.53	0.33	0.33	0.10	0.44
(v / s)_i Volume / Saturation Flow Rate		0.10	1.03	1.03	0.39	0.62	0.19	0.46
s, saturation flow rate [veh/h]		1597	1425	1425	4567	1425	3101	4567
c, Capacity [veh/h]		838	748	748	1484	463	310	2017
d1, Uniform Delay [s]		15.05	28.50	28.50	40.50	40.50	54.00	33.50
k, delay calibration		0.11	0.50	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.11	436.96	436.96	101.08	414.07	403.11	35.38
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

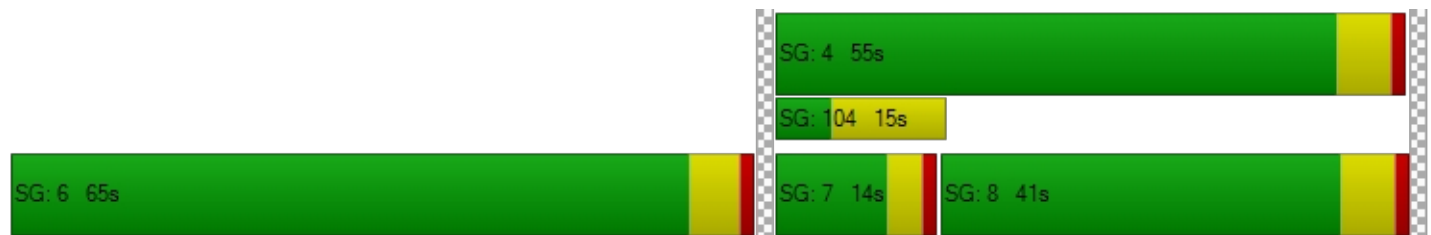
X, volume / capacity		0.19	1.96	1.96	1.21	1.90	1.89	1.05
d, Delay for Lane Group [s/veh]		15.15	465.46	465.46	141.58	454.57	457.11	68.88
Lane Group LOS		B	F	F	F	F	F	F
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		2.25	110.49	110.49	27.94	66.42	21.95	25.00
50th-Percentile Queue Length [ft]		56.19	2762.17	2762.17	698.38	1660.39	548.81	624.96
95th-Percentile Queue Length [veh]		4.05	179.23	179.23	41.07	105.65	35.40	34.47
95th-Percentile Queue Length [ft]		101.13	4480.79	4480.79	1026.79	2641.32	885.10	861.85

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	15.15	465.46	465.46	0.00	141.58	454.57	457.11	68.88	0.00
Movement LOS				B	F	F		F	F	F	F	
d_A, Approach Delay [s/veh]	0.00			442.17			244.58			152.89		
Approach LOS	A			F			F			F		
d_I, Intersection Delay [s/veh]	287.38											
Intersection LOS	F											
Intersection V/C	1.836											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	77.5
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.055

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↑↻						↵↑↑			↑↑↻		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	208	0	295	0	0	0	701	441	0	0	915	312
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	944	0	0	0	0	0	330	250	0	0	494	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1152	0	295	0	0	0	1031	691	0	0	1409	312
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	303	0	78	0	0	0	271	182	0	0	371	82
Total Analysis Volume [veh/h]	1213	0	311	0	0	0	1085	727	0	0	1483	328
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	0	0	26	51	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	80	80	80		80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	27	27	27		24	49	23	23
g / C, Green / Cycle	0.34	0.34	0.34		0.30	0.61	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.38	0.38	0.22		0.35	0.16	0.32	0.23
s, saturation flow rate [veh/h]	1597	1597	1425		3101	4567	4567	1425
c, Capacity [veh/h]	539	539	481		930	2797	1313	410
d1, Uniform Delay [s]	26.50	26.50	22.46		28.00	7.14	28.50	26.38
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	78.13	78.13	6.58		77.71	0.05	60.77	5.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

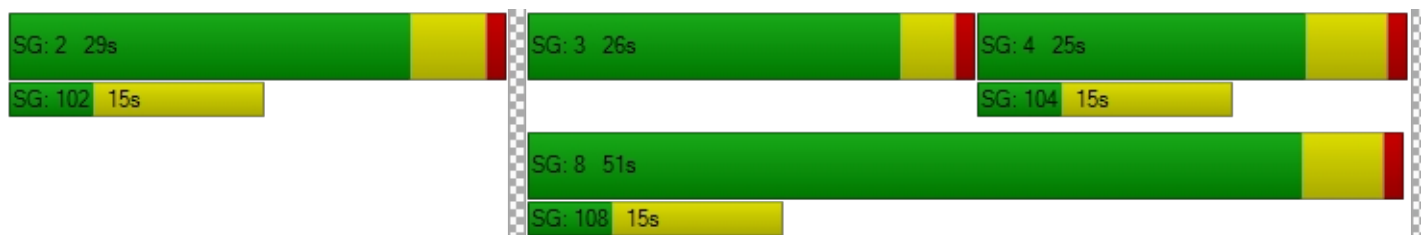
X, volume / capacity	1.13	1.13	0.65		1.17	0.26	1.13	0.80
d, Delay for Lane Group [s/veh]	104.63	104.63	29.03		105.71	7.19	89.27	31.93
Lane Group LOS	F	F	C		F	A	F	C
Critical Lane Group	Yes	No	No		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	20.96	20.96	5.41		18.16	1.53	15.06	5.96
50th-Percentile Queue Length [ft]	523.88	523.88	135.19		453.94	38.31	376.57	148.90
95th-Percentile Queue Length [veh]	30.66	30.66	9.22		27.48	2.76	22.97	9.96
95th-Percentile Queue Length [ft]	766.48	766.48	230.54		687.01	68.96	574.18	248.96

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	104.63	104.63	29.03	0.00	0.00	0.00	105.71	7.19	0.00	0.00	89.27	31.93
Movement LOS	F	F	C				F	A			F	C
d_A, Approach Delay [s/veh]	89.21			0.00			66.18			78.88		
Approach LOS	F			A			E			E		
d_I, Intersection Delay [s/veh]	77.47											
Intersection LOS	E											
Intersection V/C	1.055											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.679

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	1	1	0	1
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	52	628	17	159	528	235	62	173	22	19	703	239
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	114	127	295	56	8	50	98	0	26	21	61
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	742	144	454	584	243	112	271	22	45	724	300
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	195	38	119	154	64	29	71	6	12	191	79
Total Analysis Volume [veh/h]	66	781	152	478	615	256	118	285	23	47	762	316
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	11	21	0	16	26	10	10	23	0	10	23	16
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	19	19	14	27	37	8	24	24	5	21	37
g / C, Green / Cycle	0.08	0.27	0.27	0.20	0.39	0.53	0.11	0.34	0.34	0.08	0.30	0.53
(v / s)_i Volume / Saturation Flow Rate	0.05	0.19	0.12	0.17	0.15	0.20	0.04	0.10	0.02	0.03	0.27	0.25
s, saturation flow rate [veh/h]	1416	4050	1264	2750	4050	1264	2750	2831	1264	1416	2831	1264
c, Capacity [veh/h]	122	1099	343	550	1562	628	314	956	427	109	849	628
d1, Uniform Delay [s]	30.67	23.02	21.12	27.11	15.58	11.11	28.69	17.08	15.64	30.86	23.47	11.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.14
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.72	3.90	4.11	4.37	0.75	0.43	0.74	0.17	0.05	2.70	3.70	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

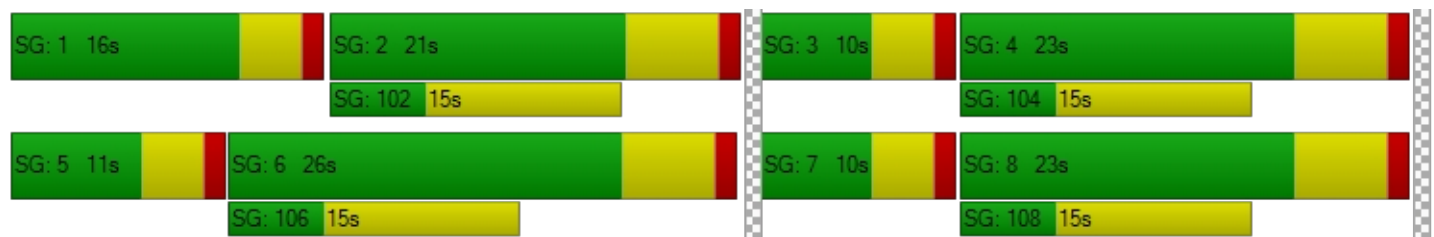
X, volume / capacity	0.54	0.71	0.44	0.87	0.39	0.41	0.38	0.30	0.05	0.43	0.90	0.50
d, Delay for Lane Group [s/veh]	34.40	26.92	25.23	31.48	16.33	11.53	29.43	17.25	15.70	33.56	27.16	12.64
Lane Group LOS	C	C	C	C	B	B	C	B	B	C	C	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.13	3.89	2.26	4.00	2.29	2.28	0.89	1.53	0.23	0.79	5.79	2.86
50th-Percentile Queue Length [ft]	28.18	97.24	56.56	99.98	57.30	56.99	22.21	38.28	5.73	19.83	144.80	71.49
95th-Percentile Queue Length [veh]	2.03	7.00	4.07	7.20	4.13	4.10	1.60	2.76	0.41	1.43	9.74	5.15
95th-Percentile Queue Length [ft]	50.72	175.03	101.81	179.97	103.14	102.58	39.97	68.90	10.31	35.69	243.47	128.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.40	26.92	25.23	31.48	16.33	11.53	29.43	17.25	15.70	33.56	27.16	12.64
Movement LOS	C	C	C	C	B	B	C	B	B	C	C	B
d_A, Approach Delay [s/veh]	27.15			20.79			20.54			23.35		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.13											
Intersection LOS	C											
Intersection V/C	0.679											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type: Signalized  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 24.1  
 Level Of Service: C  
 Volume to Capacity (v/c): 0.663

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↔↔↔↔			↔↔			↔↔			↔↔		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	2	1	0	0	1	0	1	2	0	0
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	23	493	478	56	542	19	2	151	18	893	201	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	179	170	10	66	0	0	15	0	47	11	7
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	672	648	66	608	19	2	166	18	940	212	30
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	177	171	17	160	5	1	44	5	247	56	8
Total Analysis Volume [veh/h]	24	707	682	69	640	20	2	175	19	989	223	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	28	10	21	0	18	21	0	28	31	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	27	55	6	29	29	2	13	26	36
g / C, Green / Cycle	0.05	0.34	0.69	0.08	0.36	0.36	0.03	0.16	0.33	0.45
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.27	0.04	0.14	0.14	0.00	0.11	0.32	0.16
s, saturation flow rate [veh/h]	1573	4501	2486	1573	3146	1627	1573	1652	3056	1616
c, Capacity [veh/h]	84	1524	1643	121	1137	588	50	264	993	733
d1, Uniform Delay [s]	36.37	20.76	6.33	35.66	18.92	18.93	37.56	31.59	26.95	14.20
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.82	1.02	0.77	4.21	0.97	1.89	0.33	2.85	12.35	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

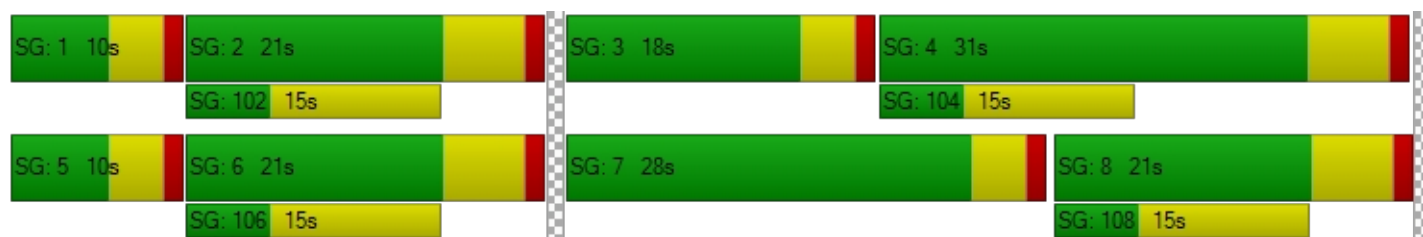
X, volume / capacity	0.28	0.46	0.42	0.57	0.38	0.38	0.04	0.66	1.00	0.35
d, Delay for Lane Group [s/veh]	38.19	21.78	7.11	39.87	19.89	20.82	37.89	34.44	39.29	14.48
Lane Group LOS	D	C	A	D	B	C	D	C	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.47	3.32	2.15	1.38	2.89	3.15	0.04	3.21	10.23	2.72
50th-Percentile Queue Length [ft]	11.85	82.96	53.63	34.53	72.17	78.69	1.02	80.28	255.75	68.07
95th-Percentile Queue Length [veh]	0.85	5.97	3.86	2.49	5.20	5.67	0.07	5.78	15.48	4.90
95th-Percentile Queue Length [ft]	21.32	149.33	96.53	62.15	129.90	141.65	1.84	144.50	386.88	122.52

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	38.19	21.78	7.11	39.87	20.19	20.82	37.89	34.44	0.00	39.29	14.48	14.48
Movement LOS	D	C	A	D	C	C	D	C		D	B	B
d_A, Approach Delay [s/veh]	14.98			22.07			34.48			34.21		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	24.11											
Intersection LOS	C											
Intersection V/C	0.663											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	311	666	199	94	376	423	268	549	140	205	660	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	749	0	19	850	76	137	0	0	0	0	35
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	1415	199	113	1226	499	405	549	140	205	660	131
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	372	52	30	323	131	107	144	37	54	174	34
Total Analysis Volume [veh/h]	327	1489	209	119	1291	525	426	578	147	216	695	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.6	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	23	0	11	22	14	14	25	0	11	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	27	27	7	24	38	12	20	20	8	16	16
g / C, Green / Cycle	0.14	0.38	0.38	0.10	0.34	0.54	0.17	0.29	0.29	0.12	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.11	0.33	0.15	0.04	0.28	0.37	0.14	0.13	0.10	0.07	0.15	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	443	1735	541	317	1550	716	532	1307	408	364	1059	331
d1, Uniform Delay [s]	28.75	19.97	15.77	29.33	21.29	13.73	27.86	20.42	19.89	29.32	24.35	22.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.35	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.43	5.76	2.07	0.73	5.40	4.63	2.86	0.24	0.54	1.55	0.70	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

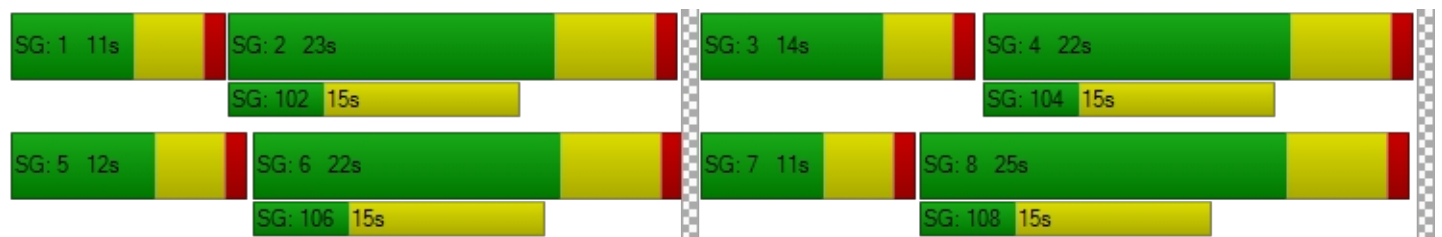
X, volume / capacity	0.74	0.86	0.39	0.37	0.83	0.73	0.80	0.44	0.36	0.59	0.66	0.42
d, Delay for Lane Group [s/veh]	31.17	25.72	17.84	30.06	26.69	18.36	30.72	20.66	20.42	30.87	25.05	23.70
Lane Group LOS	C	C	B	C	C	B	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.59	7.33	2.44	0.91	6.47	6.18	3.37	2.36	1.79	1.68	3.24	1.85
50th-Percentile Queue Length [ft]	64.64	183.33	61.08	22.66	161.81	154.60	84.13	58.89	44.75	42.09	80.99	46.26
95th-Percentile Queue Length [veh]	4.65	11.77	4.40	1.63	10.64	10.26	6.06	4.24	3.22	3.03	5.83	3.33
95th-Percentile Queue Length [ft]	116.35	294.36	109.95	40.78	266.12	256.56	151.44	106.00	80.54	75.77	145.77	83.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.17	25.72	17.84	30.06	26.69	18.36	30.72	20.66	20.42	30.87	25.05	23.70
Movement LOS	C	C	B	C	C	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	25.79			24.63			24.35			26.07		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.20											
Intersection LOS	C											
Intersection V/C	0.709											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 46: Hellman Ave/Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	↵↵		↵		↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	375	0	0	272
Total Hourly Volume [veh/h]	0	0	375	0	0	272
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	99	0	0	72
Total Analysis Volume [veh/h]	0	0	395	0	0	286
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.07	10.74	0.00	0.00	8.28	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.41		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 47: Hellman Ave/Merrill Ave**

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

**Intersection Setup**

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵		↵		↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	188	510	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	329	558	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	517	1068	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	136	281	0
Total Analysis Volume [veh/h]	0	0	0	544	1124	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Level Of Service Report**  
**Intersection 66: Archibald Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	89.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.088

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Eucalyptus			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Eucalyptus			Eucalyptus Ave		
Base Volume Input [veh/h]	0	1326	27	14	650	0	0	0	0	10	0	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	201	1017	22	88	1425	38	38	54	283	127	33	88
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	201	2343	49	102	2075	38	38	54	283	137	33	138
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	617	13	27	546	10	10	14	74	36	9	36
Total Analysis Volume [veh/h]	212	2466	52	107	2184	40	40	57	298	144	35	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	0.0	4.8	3.6	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	67	0	10	62	0	0	23	15	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	65	65	8	60	60	21	21	21	21
g / C, Green / Cycle	0.13	0.65	0.65	0.08	0.60	0.60	0.21	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.13	0.75	0.76	0.07	0.66	0.67	0.04	0.03	0.21	0.26
s, saturation flow rate [veh/h]	1597	1676	1664	1597	1676	1666	1079	1676	1425	1223
c, Capacity [veh/h]	208	1090	1082	128	1006	1000	90	352	299	309
d1, Uniform Delay [s]	43.50	17.50	17.50	45.36	20.00	20.00	49.62	32.30	39.46	41.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.23	0.37
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.55	80.57	84.07	13.29	61.86	64.59	3.39	0.21	34.16	57.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.02	1.16	1.16	0.84	1.11	1.11	0.44	0.16	1.00	1.05
d, Delay for Lane Group [s/veh]	78.05	98.07	101.57	58.65	81.86	84.59	53.01	32.52	73.62	99.16
Lane Group LOS	F	F	F	E	F	F	D	C	E	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	6.96	44.27	45.00	3.02	36.83	37.36	1.06	1.12	9.85	12.46
50th-Percentile Queue Length [ft]	174.03	1106.65	1124.90	75.49	920.83	933.94	26.56	27.97	246.26	311.52
95th-Percentile Queue Length [veh]	11.39	62.11	63.36	5.44	50.79	51.68	1.91	2.01	15.00	18.72
95th-Percentile Queue Length [ft]	284.71	1552.66	1584.09	135.89	1269.65	1291.97	47.82	50.34	374.94	468.06

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	78.05	99.78	101.57	58.65	83.20	84.59	53.01	32.52	73.62	99.16	99.16	99.16
Movement LOS	F	F	F	E	F	F	D	C	E	F	F	F
d_A, Approach Delay [s/veh]	98.13			82.10			65.60			99.16		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	89.50											
Intersection LOS	F											
Intersection V/C	1.088											

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



## Opening Year 2023 No Project AM

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Exst+cum23+Proj.vistro

Scenario 10 Ex+Cumm2023 PM Peak

Report File: V:\...\Future 2023 No Proj PM.pdf

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**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Euclid Ave / Philadelphia St	Signalized	HCM 2010	WB Thru	0.766	30.6	C
2	Grove Ave / Philadelphia St	Signalized	HCM 2010	NB Left	0.644	20.9	C
3	Archibald Ave / Philadelphia St	Signalized	HCM 2010	SB Left	0.401	19.5	B
4	SR60 WB Ramp / Euclid Ave	Signalized	HCM 2010	WB Right	0.754	17.8	B
5	SR60 EB Ramp / Euclid Ave	Signalized	HCM 2010	NB Right	0.859	22.5	C
6	SR60 WB Ramp / Grove Ave	Signalized	HCM 2010	WB Right	0.845	19.0	B
7	SR60 EB Ramp / Grove Ave	Signalized	HCM 2010	NB Right	0.828	26.8	C
8	SR60 WB Ramp / Archibald Ave	Signalized	HCM 2010	SB Right	0.809	21.6	C
9	SR60 EB Ramp / Archibald Ave	Signalized	HCM 2010	NB Right	0.932	29.8	C
10	Euclid Ave / Walnut St	Signalized	HCM 2010	WB Left	0.737	22.8	C
11	Grove Ave / Walnut Ave	Signalized	HCM 2010	EB Left	0.487	20.0	B
12	Archibald Ave / Walnut Ave	Signalized	HCM 2010	SB Left	0.536	8.6	A
13	Euclid Ave / Riverside Dr	Signalized	HCM 2010	NB Thru	0.910	47.7	D
14	Grove Ave / Riverside Dr	Signalized	HCM 2010	EB Left	0.397	15.9	B
15	Archibald Ave / Riverside Dr	Signalized	HCM 2010	SB Left	0.686	28.6	C
16	Euclid Ave / Chino Ave	Signalized	HCM 2010	WB Thru	1.130	78.9	E
17	Grove Ave / Chino Ave	All-way stop	HCM 2010	EB Thru	1.291	107.1	F
18	Archibald Ave / Chino Ave	Signalized	HCM 2010	EB Left	0.762	27.7	C
19	Euclid Ave / Schaefer Ave	Signalized	HCM 2010	NB Left	0.830	34.4	C
20	Grove Ave / Schaefer Ave	All-way stop	HCM 2010	NB Thru	0.529	13.6	B
21	SR71 SB Ramp / Grand Ave	Signalized	HCM 2010	SB Right	1.084	65.3	E
22	SR71 NB Ramp / Grand Ave	Signalized	HCM 2010	SB Right	1.079	98.1	F
23	Ramona Ave / Edison Ave	Signalized	HCM 2010	NB Left	0.774	32.1	C
24	Central Ave / Edison Ave	Signalized	HCM 2010	WB Left	0.891	48.7	D
25	Mountain Ave/ Edison Ave	Signalized	HCM 2010	SB Left	0.467	15.0	B
26	Euclid Ave / Edison Ave	Signalized	HCM 2010	EB Thru	0.902	37.3	D
27	Grove Ave / Edison Ave	All-way stop	HCM 2010	EB Thru	2.236	321.4	F
28	Archibald Ave / Edison Ave	Signalized	HCM 2010	EB Right	1.267	144.2	F
29	Milliken Ave / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	EB Thru	1.219	161.4	F
30	I-15 SB Ramp / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	SB Right	1.050	64.3	E

31	I-15 NB Ramp / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	EB Right	0.433	74.6	E
32	Euclid Ave / Eucalyptus Ave	Signalized	HCM 2010	SB Left	0.811	21.3	C
33	Grove Ave / Eucalyptus Ave	Two-way stop	HCM 2010	WB Left	0.103	18.9	C
34	Carpenter Ave / Eucalyptus Ave	Two-way stop	HCM 2010	NB Left	0.011	9.6	A
35	Euclid Ave / Merrill Ave	Signalized	HCM 2010	WB Right	0.509	25.9	C
36	Grove Ave / Merrill Ave	All-way stop	HCM 2010	WB Left	1.721	202.5	F
37	Carpenter Ave / Merrill Ave	Two-way stop	HCM 2010	SB Left	1.054	1,166.9	F
38	Archibald Ave / Merrill Ave	Signalized	HCM 2010	WB Left	0.885	46.6	D
39	Archibald Ave / Limonite Ave	Signalized	HCM 2010	WB Left	0.937	28.4	C
40	Hamner Ave / Limonite Ave	Signalized	HCM 2010	WB Left	1.074	78.0	E
41	I-15 SB Ramp / Limonite Ave	Signalized	HCM 2010	EB Right	1.512	125.0	F
42	I-15 NB Ramp / Limonite Ave	Signalized	HCM 2010	WB Thru	1.118	92.1	F
43	Euclid Ave / Kimball Ave	Signalized	HCM 2010	SB Left	0.769	26.5	C
44	Euclid Ave / Pine Ave	Signalized	HCM 2010	EB Thru	0.856	25.3	C
45	Archibald Ave / Schleisman Rd	Signalized	HCM 2010	SB Left	0.678	28.0	C
46	Hellman Ave/Eucalyptus Ave	Two-way stop	HCM 2010	NB Left	0.000	16.9	C
47	Hellman Ave/Merrill Ave	Unknown	?		?	?	?
66	Archibald Ave/Eucalyptus Ave	Signalized	HCM 2010	EB Right	1.226	139.9	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.



**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	30.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.766

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	223	895	174	95	956	99	125	426	103	157	435	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	38	0	0	28	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	933	174	95	984	99	125	426	103	157	435	89
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	246	46	25	259	26	33	112	27	41	114	23
Total Analysis Volume [veh/h]	235	982	183	100	1036	104	132	448	108	165	458	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	22	0	14	22	0	9	25	0	9	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	12	25	25	7	20	20	32	23	23	32	23
g / C, Green / Cycle	0.17	0.36	0.36	0.10	0.29	0.29	0.46	0.33	0.33	0.46	0.33
(v / s)_i Volume / Saturation Flow Rate	0.15	0.31	0.13	0.06	0.23	0.23	0.14	0.17	0.17	0.17	0.33
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1665	965	1676	1566	973	1693
c, Capacity [veh/h]	274	1149	513	156	915	477	318	549	513	462	564
d1, Uniform Delay [s]	28.18	20.70	16.45	30.38	23.27	23.28	17.49	19.08	19.10	14.57	23.10
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.28
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.70	8.17	1.93	4.30	8.08	14.53	0.87	0.77	0.83	0.47	23.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

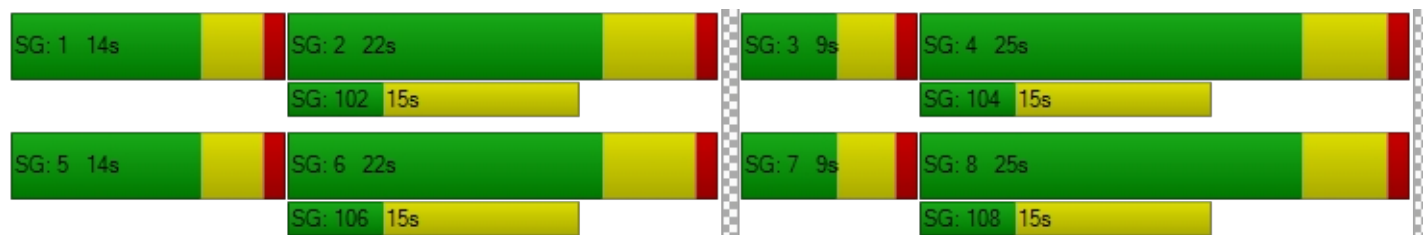
X, volume / capacity	0.86	0.85	0.36	0.64	0.82	0.82	0.42	0.52	0.52	0.36	0.98
d, Delay for Lane Group [s/veh]	35.87	28.88	18.38	34.68	31.36	37.81	18.36	19.85	19.94	15.03	46.66
Lane Group LOS	D	C	B	C	C	D	B	B	B	B	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	4.10	7.75	2.18	1.70	6.18	7.31	1.25	3.48	3.28	1.56	11.57
50th-Percentile Queue Length [ft]	102.62	193.86	54.62	42.59	154.60	182.85	31.31	87.05	82.07	39.09	289.26
95th-Percentile Queue Length [veh]	7.39	12.32	3.93	3.07	10.26	11.75	2.25	6.27	5.91	2.81	17.15
95th-Percentile Queue Length [ft]	184.72	308.03	98.32	76.66	256.56	293.74	56.36	156.69	147.72	70.36	428.72

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	35.87	28.88	18.38	34.68	33.15	37.81	18.36	19.88	19.94	15.03	46.66	46.66
Movement LOS	D	C	B	C	C	D	B	B	B	B	D	D
d_A, Approach Delay [s/veh]	28.68			33.66			19.60			39.38		
Approach LOS	C			C			B			D		
d_I, Intersection Delay [s/veh]	30.56											
Intersection LOS	C											
Intersection V/C	0.766											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.644

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	181	681	76	104	1078	112	117	245	268	242	338	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	55	0	0	41	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	181	736	76	104	1119	112	117	245	268	242	338	86
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	194	20	27	294	29	31	64	71	64	89	23
Total Analysis Volume [veh/h]	191	775	80	109	1178	118	123	258	282	255	356	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	30	0	10	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	8	29	29	7	28	28	28	19	19	28	19	19
g / C, Green / Cycle	0.11	0.42	0.42	0.09	0.41	0.41	0.40	0.27	0.27	0.40	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.06	0.18	0.18	0.04	0.27	0.27	0.12	0.15	0.19	0.25	0.14	0.14
s, saturation flow rate [veh/h]	3101	3192	1598	3101	3192	1599	1048	1676	1482	1011	1676	1625
c, Capacity [veh/h]	337	1342	671	293	1297	650	448	454	401	396	465	451
d1, Uniform Delay [s]	29.64	14.31	14.33	29.74	16.91	16.91	16.52	21.99	22.98	19.98	21.14	21.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.15	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.50	0.98	1.97	0.78	2.71	5.33	0.33	1.12	2.25	2.41	0.79	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.42	0.43	0.37	0.67	0.67	0.27	0.57	0.70	0.64	0.49	0.49
d, Delay for Lane Group [s/veh]	31.14	15.30	16.30	30.52	19.63	22.24	16.85	23.12	25.23	22.38	21.93	21.98
Lane Group LOS	C	B	B	C	B	C	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.47	2.85	3.05	0.83	5.20	5.69	1.28	3.45	4.02	3.08	2.91	2.84
50th-Percentile Queue Length [ft]	36.82	71.32	76.31	20.63	130.11	142.20	31.94	86.14	100.62	77.03	72.63	70.93
95th-Percentile Queue Length [veh]	2.65	5.14	5.49	1.49	8.95	9.60	2.30	6.20	7.24	5.55	5.23	5.11
95th-Percentile Queue Length [ft]	66.28	128.38	137.35	37.13	223.64	239.98	57.49	155.05	181.12	138.66	130.73	127.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.14	15.56	16.30	30.52	20.32	22.24	16.85	23.12	25.23	22.38	21.95	21.98
Movement LOS	C	B	B	C	C	C	B	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.46			21.28			22.85			22.11		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	20.93											
Intersection LOS	C											
Intersection V/C	0.644											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.401

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Lane Configuration	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Turning Movement												
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	142	342	62	38	650	35	48	316	340	259	170	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	299	0	0	451	0	0	0	11	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	153	641	62	38	1101	35	48	316	351	259	170	18
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	169	16	10	290	9	13	83	92	68	45	5
Total Analysis Volume [veh/h]	161	675	65	40	1159	37	51	333	369	273	179	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	4.8	3.2	4.8	4.8	3.0	4.4	4.4	3.0	4.4	4.4
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	12	21	21	14	23	23	11	21	21	14	24	24
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	10	0	10	10
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	10	35	47	5	30	37	5	13	25	9	17	23
g / C, Green / Cycle	0.14	0.51	0.66	0.07	0.43	0.53	0.07	0.18	0.35	0.13	0.24	0.34
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.05	0.01	0.25	0.03	0.02	0.10	0.26	0.09	0.06	0.01
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	443	2303	905	220	1974	721	229	574	456	406	756	434
d1, Uniform Delay [s]	27.12	10.09	4.88	30.61	15.12	8.76	30.52	26.29	21.86	28.99	21.60	17.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.16	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.50	0.32	0.15	0.39	1.29	0.03	0.48	0.93	5.09	1.94	0.16	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

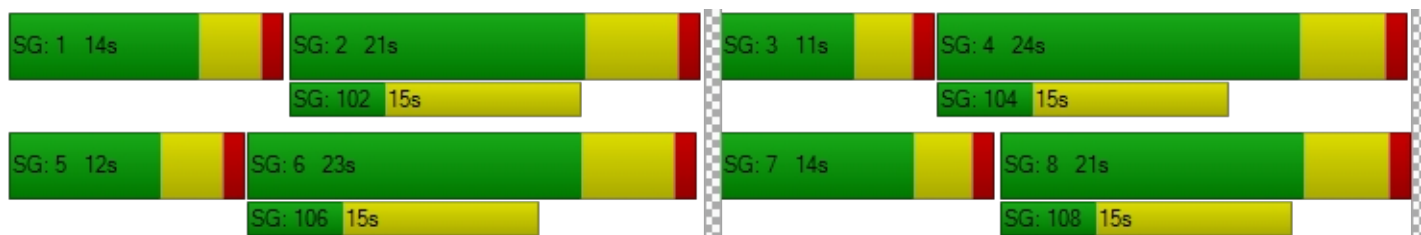
X, volume / capacity	0.36	0.29	0.07	0.18	0.59	0.05	0.22	0.58	0.81	0.67	0.24	0.04
d, Delay for Lane Group [s/veh]	27.62	10.42	5.04	31.01	16.41	8.79	31.00	27.22	26.94	30.93	21.76	17.19
Lane Group LOS	C	B	A	C	B	A	C	C	C	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.16	1.73	0.29	0.31	4.22	0.24	0.40	2.42	5.57	2.14	1.11	0.20
50th-Percentile Queue Length [ft]	29.06	43.22	7.34	7.77	105.48	6.09	9.90	60.50	139.28	53.49	27.70	5.03
95th-Percentile Queue Length [veh]	2.09	3.11	0.53	0.56	7.59	0.44	0.71	4.36	9.44	3.85	1.99	0.36
95th-Percentile Queue Length [ft]	52.31	77.79	13.21	13.98	189.69	10.97	17.81	108.90	236.06	96.28	49.86	9.06

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.62	10.42	5.04	31.01	16.41	8.79	31.00	27.22	26.94	30.93	21.76	17.19
Movement LOS	C	B	A	C	B	A	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	13.10			16.65			27.34			26.89		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.53											
Intersection LOS	B											
Intersection V/C	0.401											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.754

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	212	982	0	0	856	491	0	0	0	432	0	334
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	359	49	0	0	31	0	0	0	0	57	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	571	1031	0	0	887	491	0	0	0	489	0	334
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	150	271	0	0	233	129	0	0	0	129	0	88
Total Analysis Volume [veh/h]	601	1085	0	0	934	517	0	0	0	515	0	352
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	0	4	0
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	15	44	0	0	29	0	0	0	0	0	0	16	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	0	10	0
Rest In Walk		No			No							No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	No			No							No	
Pedestrian Recall	No	No			No							No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	13	42	27	27		14	14	14
g / C, Green / Cycle	0.22	0.70	0.45	0.45		0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.19	0.34	0.29	0.36		0.18	0.19	0.20
s, saturation flow rate [veh/h]	3101	3192	3192	1425		1597	1551	1425
c, Capacity [veh/h]	672	2234	1436	641		373	362	333
d1, Uniform Delay [s]	22.83	4.09	12.83	14.24		21.62	21.71	21.97
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	4.49	0.76	2.30	10.43		3.80	4.22	5.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

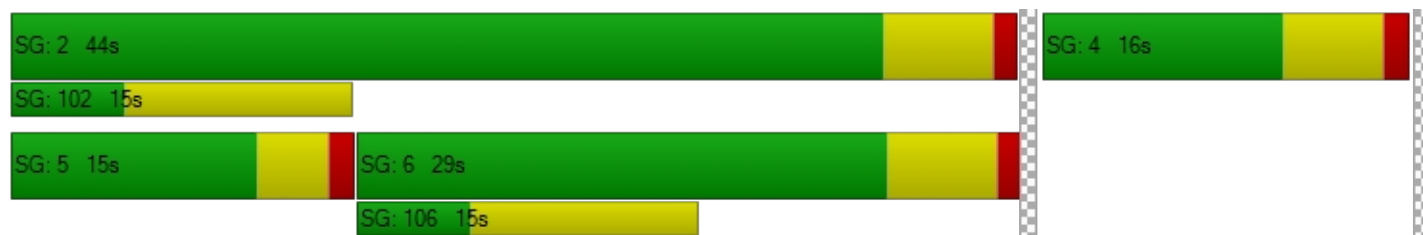
X, volume / capacity	0.89	0.49	0.65	0.81		0.79	0.80	0.85
d, Delay for Lane Group [s/veh]	27.32	4.85	15.12	24.67		25.42	25.93	27.86
Lane Group LOS	C	A	B	C		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	4.04	1.60	4.31	6.59		3.80	3.81	3.85
50th-Percentile Queue Length [ft]	101.03	40.03	107.65	164.69		95.09	95.24	96.27
95th-Percentile Queue Length [veh]	7.27	2.88	7.71	10.80		6.85	6.86	6.93
95th-Percentile Queue Length [ft]	181.85	72.06	192.74	269.92		171.17	171.42	173.28

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.32	4.85	0.00	0.00	15.12	24.67	0.00	0.00	0.00	25.64	25.93	27.51
Movement LOS	C	A			B	C				C	C	C
d_A, Approach Delay [s/veh]	12.86		18.53		0.00			26.38				
Approach LOS	B		B		A			C				
d_I, Intersection Delay [s/veh]	17.84											
Intersection LOS	B											
Intersection V/C	0.754											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.859

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							+†					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	843	439	286	1007	0	347	2	234	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	408	279	0	88	0	0	0	105	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1251	718	286	1095	0	347	2	339	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	329	189	75	288	0	91	1	89	0	0	0
Total Analysis Volume [veh/h]	0	1317	756	301	1153	0	365	2	357	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	39	0	10	49	0	0	21	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C	
C, Cycle Length [s]	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	37	37	8	47	19	19	
g / C, Green / Cycle	0.53	0.53	0.11	0.67	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.41	0.51	0.10	0.36	0.23	0.25	
s, saturation flow rate [veh/h]	3192	1482	3101	3192	1597	1426	
c, Capacity [veh/h]	1687	783	354	2143	433	387	
d1, Uniform Delay [s]	13.24	15.88	30.41	5.92	24.08	24.83	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.15	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.66	24.70	5.71	0.97	4.51	12.65	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.78	0.97	0.85	0.54	0.84	0.93	
d, Delay for Lane Group [s/veh]	16.90	40.58	36.12	6.89	28.59	37.48	
Lane Group LOS	B	D	D	A	C	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	7.39	14.37	2.60	3.04	5.67	6.56	
50th-Percentile Queue Length [ft]	184.80	359.24	64.88	76.09	141.66	163.89	
95th-Percentile Queue Length [veh]	11.85	20.59	4.67	5.48	9.57	10.75	
95th-Percentile Queue Length [ft]	296.27	514.66	116.79	136.95	239.26	268.86	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	16.90	40.58	36.12	6.89	0.00	28.66	37.48	37.48	0.00	0.00	0.00
Movement LOS		B	D	D	A		C	D	D			
d_A, Approach Delay [s/veh]	25.54		12.94			33.00			0.00			
Approach LOS	C		B			C			A			
d_I, Intersection Delay [s/veh]	22.50											
Intersection LOS	C											
Intersection V/C	0.859											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	160	807	0	0	922	680	0	0	0	205	2	306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	17	55	0	0	41	0	0	0	0	4	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	177	862	0	0	963	680	0	0	0	209	2	306
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	227	0	0	253	179	0	0	0	55	1	81
Total Analysis Volume [veh/h]	186	907	0	0	1014	716	0	0	0	220	2	322
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	0	4	0
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	10	44	0	0	34	0	0	0	0	0	0	16	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	0	10	0
Rest In Walk		No			No							No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	No			No							No	
Pedestrian Recall	No	No			No							No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	8	42	32	32		14	14
g / C, Green / Cycle	0.13	0.70	0.53	0.53		0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.12	0.28	0.32	0.50		0.14	0.23
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	213	2234	1702	760		373	333
d1, Uniform Delay [s]	25.50	3.77	9.58	13.13		20.48	22.78
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	10.64	0.55	1.54	21.23		1.52	16.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.87	0.41	0.60	0.94		0.60	0.97
d, Delay for Lane Group [s/veh]	36.15	4.32	11.12	34.37		22.00	39.34
Lane Group LOS	D	A	B	C		C	D
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	2.92	1.08	3.50	10.55		2.59	5.46
50th-Percentile Queue Length [ft]	73.00	26.99	87.38	263.63		64.79	136.42
95th-Percentile Queue Length [veh]	5.26	1.94	6.29	15.87		4.67	9.29
95th-Percentile Queue Length [ft]	131.39	48.58	157.29	396.77		116.63	232.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	36.15	4.32	0.00	0.00	11.12	34.37	0.00	0.00	0.00	22.00	22.00	39.34
Movement LOS	D	A			B	C				C	C	D
d_A, Approach Delay [s/veh]	9.74		20.74			0.00			32.27			
Approach LOS	A		C			A			C			
d_I, Intersection Delay [s/veh]	19.03											
Intersection LOS	B											
Intersection V/C	0.845											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	26.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.828

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	581	251	416	709	0	380	1	226	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	72	6	0	45	0	0	0	17	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	653	257	416	754	0	380	1	243	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	172	68	109	198	0	100	0	64	0	0	0
Total Analysis Volume [veh/h]	0	687	271	438	794	0	400	1	256	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	26	0	23	49	0	0	21	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	24	24	21	47	19	19	
g / C, Green / Cycle	0.34	0.34	0.30	0.67	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.29	0.30	0.27	0.25	0.25	0.18	
s, saturation flow rate [veh/h]	1676	1585	1597	3192	1597	1425	
c, Capacity [veh/h]	575	544	479	2143	433	387	
d1, Uniform Delay [s]	21.16	21.66	23.63	5.03	24.81	22.65	
k, delay calibration	0.50	0.50	0.19	0.50	0.15	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	13.30	18.31	11.53	0.49	11.29	1.94	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.83	0.88	0.91	0.37	0.93	0.66	
d, Delay for Lane Group [s/veh]	34.46	39.97	35.16	5.52	36.09	24.59	
Lane Group LOS	C	D	D	A	D	C	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	8.45	9.24	7.60	1.64	7.16	3.59	
50th-Percentile Queue Length [ft]	211.35	231.11	189.93	40.98	178.93	89.70	
95th-Percentile Queue Length [veh]	13.22	14.23	12.12	2.95	11.54	6.46	
95th-Percentile Queue Length [ft]	330.57	355.76	302.94	73.76	288.62	161.46	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	36.13	39.97	35.16	5.52	0.00	36.09	36.09	24.59	0.00	0.00	0.00
Movement LOS		D	D	D	A		D	D	C			
d_A, Approach Delay [s/veh]	37.22			16.06			31.61			0.00		
Approach LOS	D			B			C			A		
d_I, Intersection Delay [s/veh]	26.77											
Intersection LOS	C											
Intersection V/C	0.828											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	21.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.809

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration	⇐			⇐						⇐⇑⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	322	456	0	0	993	339	0	0	0	304	5	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	320	332	0	0	504	0	0	0	0	204	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	642	788	0	0	1497	339	0	0	0	508	5	150
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	169	207	0	0	394	89	0	0	0	134	1	39
Total Analysis Volume [veh/h]	676	829	0	0	1576	357	0	0	0	535	5	158
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	16	46	0	0	30	0	0	0	0	0	14	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	14	44	28	28		12	12	12
g / C, Green / Cycle	0.23	0.73	0.47	0.47		0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.22	0.18	0.40	0.42		0.17	0.17	0.11
s, saturation flow rate [veh/h]	3101	4567	3192	1527		1597	1598	1425
c, Capacity [veh/h]	723	3349	1490	713		319	320	285
d1, Uniform Delay [s]	22.55	2.61	14.31	14.76		23.11	23.11	21.59
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	6.31	0.18	6.95	17.07		6.11	6.10	1.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.93	0.25	0.87	0.90		0.85	0.85	0.55
d, Delay for Lane Group [s/veh]	28.86	2.78	21.26	31.83		29.22	29.21	23.28
Lane Group LOS	C	A	C	C		C	C	C
Critical Lane Group	Yes	No	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh]	4.71	0.43	7.44	9.57		3.79	3.79	1.91
50th-Percentile Queue Length [ft]	117.85	10.71	185.93	239.14		94.73	94.77	47.74
95th-Percentile Queue Length [veh]	8.27	0.77	11.91	14.64		6.82	6.82	3.44
95th-Percentile Queue Length [ft]	206.87	19.28	297.74	365.95		170.51	170.59	85.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.86	2.78	0.00	0.00	23.19	31.83	0.00	0.00	0.00	29.21	29.21	23.28
Movement LOS	C	A			C	C				C	C	C
d_A, Approach Delay [s/veh]	14.49			24.78			0.00			27.87		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	21.56											
Intersection LOS	C											
Intersection V/C	0.809											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	29.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.932

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	200.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	712	396	306	985	0	79	1	450	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	567	232	10	710	0	0	0	239	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1279	628	316	1695	0	79	1	689	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	337	165	83	446	0	21	0	181	0	0	0
Total Analysis Volume [veh/h]	0	1346	661	333	1784	0	83	1	725	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	29	0	14	43	0	0	17	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	27	27	12	41	15	15	15	
g / C, Green / Cycle	0.45	0.45	0.20	0.68	0.25	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.42	0.47	0.21	0.39	0.05	0.25	0.25	
s, saturation flow rate [veh/h]	3192	1428	1597	4567	1597	1426	1425	
c, Capacity [veh/h]	1436	642	319	3121	399	356	356	
d1, Uniform Delay [s]	15.62	16.50	24.00	4.94	17.80	22.50	22.50	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	12.21	46.73	35.41	0.77	0.26	26.95	27.00	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.93	1.04	1.04	0.57	0.21	1.02	1.02	
d, Delay for Lane Group [s/veh]	27.83	63.23	59.41	5.70	18.06	49.45	49.50	
Lane Group LOS	C	F	F	A	B	F	F	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh]	9.15	15.15	7.13	2.11	0.83	7.02	7.02	
50th-Percentile Queue Length [ft]	228.72	378.68	178.27	52.87	20.76	175.55	175.61	
95th-Percentile Queue Length [veh]	14.11	22.15	11.74	3.81	1.49	11.48	11.48	
95th-Percentile Queue Length [ft]	352.74	553.87	293.56	95.17	37.37	286.95	287.05	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	28.04	63.23	59.41	5.70	0.00	18.06	49.45	49.48	0.00	0.00	0.00
Movement LOS		C	F	F	A		B	D	F			
d_A, Approach Delay [s/veh]	39.63			14.15			46.25			0.00		
Approach LOS	D			B			D			A		
d_I, Intersection Delay [s/veh]	29.78											
Intersection LOS	C											
Intersection V/C	0.932											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	118	995	63	276	805	145	115	335	132	87	262	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	777	0	0	193	0	0	0	12	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	118	1772	63	276	998	145	115	335	144	87	262	144
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	466	17	73	263	38	30	88	38	23	69	38
Total Analysis Volume [veh/h]	124	1865	66	291	1051	153	121	353	152	92	276	152
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	12	46	0	12	46	0	0	22	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	44	44	10	44	44	20	20	20	20	20	20
g / C, Green / Cycle	0.12	0.55	0.55	0.13	0.56	0.56	0.25	0.25	0.25	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.09	0.45	0.45	0.11	0.26	0.12	0.16	0.18	0.18	0.13	0.15	0.15
s, saturation flow rate [veh/h]	1416	2831	1461	2750	4050	1264	763	1487	1338	711	1487	1314
c, Capacity [veh/h]	170	1557	804	344	2249	702	171	372	334	147	372	328
d1, Uniform Delay [s]	33.96	14.71	14.75	34.25	10.69	9.00	37.13	27.36	27.44	38.04	26.50	26.62
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.94	4.88	9.14	5.76	0.70	0.71	5.24	2.52	2.92	4.35	1.58	1.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.73	0.82	0.82	0.85	0.47	0.22	0.71	0.71	0.72	0.63	0.60	0.62
d, Delay for Lane Group [s/veh]	39.90	19.59	23.89	40.01	11.39	9.72	42.37	29.88	30.36	42.39	28.08	28.53
Lane Group LOS	D	B	C	D	B	A	D	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	2.49	8.75	10.03	2.90	3.24	1.28	2.53	4.54	4.19	1.91	3.69	3.38
50th-Percentile Queue Length [ft]	62.16	218.83	250.72	72.39	80.88	31.90	63.36	113.57	104.63	47.86	92.20	84.59
95th-Percentile Queue Length [veh]	4.48	13.61	15.22	5.21	5.82	2.30	4.56	8.04	7.53	3.45	6.64	6.09
95th-Percentile Queue Length [ft]	111.89	340.14	380.57	130.31	145.58	57.41	114.05	200.96	188.34	86.16	165.95	152.26

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.90	20.96	23.89	40.01	11.39	9.72	42.37	30.00	30.36	42.39	28.17	28.53
Movement LOS	D	C	C	D	B	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	22.19			16.79			32.48			30.79		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	22.79											
Intersection LOS	C											
Intersection V/C	0.737											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	20.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.487

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	63	506	34	179	495	141	128	257	52	19	153	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	78	0	0	61	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	584	34	179	556	141	128	257	52	19	153	112
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	154	9	47	146	37	34	68	14	5	40	29
Total Analysis Volume [veh/h]	66	615	36	188	585	148	135	271	55	20	161	118
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	13	24	0	15	26	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	6	31	31	11	36	36	9	16	16	22	11	11
g / C, Green / Cycle	0.08	0.45	0.45	0.16	0.52	0.52	0.12	0.23	0.23	0.31	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.04	0.19	0.19	0.12	0.22	0.22	0.08	0.10	0.10	0.02	0.09	0.09
s, saturation flow rate [veh/h]	1597	1676	1710	1597	1676	1626	1597	1676	1580	1090	1676	1451
c, Capacity [veh/h]	133	748	764	248	869	842	194	383	361	389	272	236
d1, Uniform Delay [s]	30.66	13.27	13.28	28.31	10.45	10.45	29.49	23.12	23.16	19.73	26.89	27.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.82	1.80	1.77	4.73	1.54	1.59	4.40	0.78	0.85	0.05	1.62	2.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

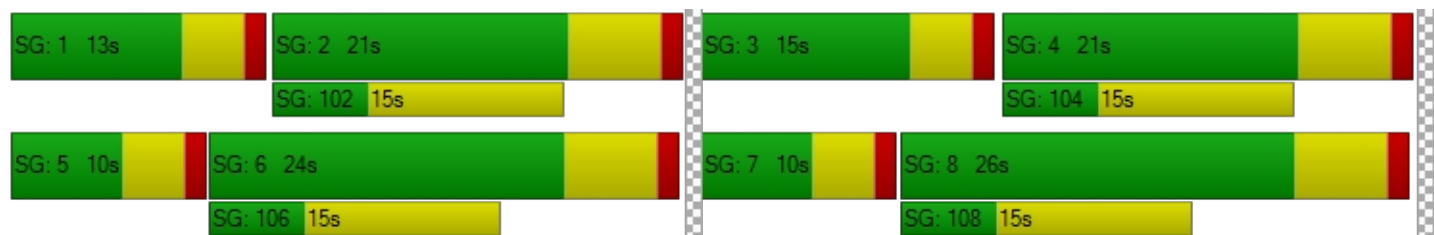
X, volume / capacity	0.49	0.43	0.43	0.76	0.43	0.43	0.69	0.43	0.44	0.05	0.53	0.57
d, Delay for Lane Group [s/veh]	33.48	15.08	15.05	33.04	11.99	12.04	33.89	23.90	24.01	19.79	28.50	29.22
Lane Group LOS	C	B	B	C	B	B	C	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.09	3.24	3.30	3.07	3.14	3.06	2.26	2.24	2.15	0.23	2.18	2.06
50th-Percentile Queue Length [ft]	27.15	80.94	82.54	76.66	78.47	76.40	56.62	55.99	53.87	5.77	54.45	51.40
95th-Percentile Queue Length [veh]	1.96	5.83	5.94	5.52	5.65	5.50	4.08	4.03	3.88	0.42	3.92	3.70
95th-Percentile Queue Length [ft]	48.88	145.70	148.57	137.98	141.25	137.53	101.92	100.78	96.96	10.38	98.01	92.52

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.48	15.06	15.05	33.04	12.01	12.04	33.89	23.94	24.01	19.79	28.57	29.22
Movement LOS	C	B	B	C	B	B	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	16.76			16.31			26.86			28.24		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.96											
Intersection LOS	B											
Intersection V/C	0.487											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	8.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.536

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	65	736	43	138	1073	14	18	7	32	23	12	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	829	0	0	904	0	0	1	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	1565	43	138	1977	14	18	8	32	23	12	74
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	412	11	36	520	4	5	2	8	6	3	19
Total Analysis Volume [veh/h]	68	1647	45	145	2081	15	19	8	34	24	13	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	17	28	0	0	22	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	39	39	8	42	42	7	7	7	7
g / C, Green / Cycle	0.09	0.66	0.66	0.13	0.70	0.70	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.04	0.35	0.35	0.09	0.43	0.43	0.02	0.03	0.02	0.06
s, saturation flow rate [veh/h]	1597	3192	1654	1597	3192	1670	1170	1526	1223	1456
c, Capacity [veh/h]	149	2097	1087	213	2225	1164	167	167	210	159
d1, Uniform Delay [s]	25.75	5.42	5.42	24.78	4.84	4.84	28.07	24.46	26.26	25.38
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.16	0.97	1.86	3.79	1.30	2.47	0.30	0.78	0.24	3.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

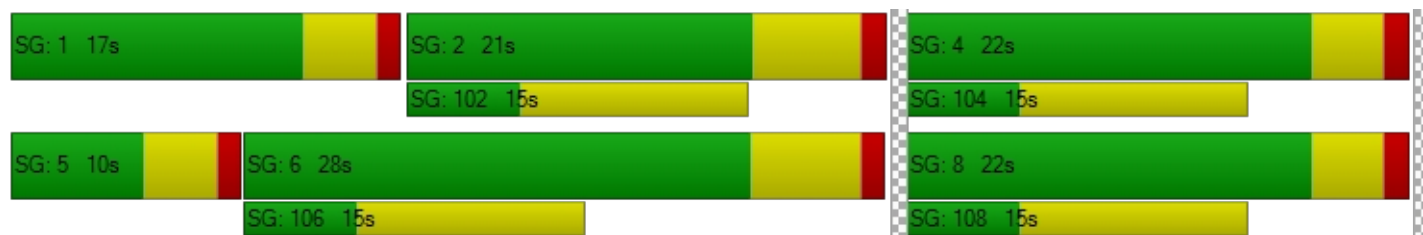
X, volume / capacity	0.46	0.53	0.53	0.68	0.62	0.62	0.11	0.25	0.11	0.57
d, Delay for Lane Group [s/veh]	27.91	6.39	7.28	28.57	6.14	7.32	28.37	25.24	26.50	28.56
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.93	2.30	2.66	2.00	2.45	2.95	0.26	0.53	0.31	1.26
50th-Percentile Queue Length [ft]	23.15	57.52	66.41	49.91	61.25	73.70	6.46	13.34	7.76	31.48
95th-Percentile Queue Length [veh]	1.67	4.14	4.78	3.59	4.41	5.31	0.47	0.96	0.56	2.27
95th-Percentile Queue Length [ft]	41.66	103.54	119.53	89.83	110.25	132.65	11.63	24.02	13.98	56.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.91	6.68	7.28	28.57	6.54	7.32	28.37	25.24	25.24	26.50	28.56	28.56
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	7.51			7.97			26.22			28.13		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.60											
Intersection LOS	A											
Intersection V/C	0.536											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	47.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.910

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	67	832	259	118	717	133	118	395	45	200	459	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	46	687	0	0	191	2	0	284	13	0	250	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	1519	259	118	908	135	118	679	58	200	709	81
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	400	68	31	239	36	31	179	15	53	187	21
Total Analysis Volume [veh/h]	119	1599	273	124	956	142	124	715	61	211	746	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	29	0	10	29	20	20	38	0	13	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	27	27	8	27	38	9	36	11	38	38
g / C, Green / Cycle	0.09	0.30	0.30	0.09	0.30	0.43	0.10	0.40	0.12	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.07	0.32	0.17	0.07	0.19	0.09	0.07	0.41	0.12	0.22	0.22
s, saturation flow rate [veh/h]	1774	5074	1583	1774	5074	1583	1774	1911	1774	1863	1870
c, Capacity [veh/h]	158	1522	475	158	1522	637	186	764	217	777	780
d1, Uniform Delay [s]	40.04	31.50	26.64	40.16	27.17	17.64	38.77	27.00	39.35	19.65	19.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.50	0.11	0.16	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.13	37.57	4.99	8.35	1.97	0.17	4.07	36.43	22.62	0.82	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	1.05	0.57	0.79	0.63	0.22	0.67	1.02	0.97	0.53	0.53
d, Delay for Lane Group [s/veh]	47.17	69.07	31.64	48.51	29.14	17.82	42.84	63.43	61.98	20.47	20.47
Lane Group LOS	D	F	C	D	C	B	D	F	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	2.79	15.56	5.33	2.96	5.84	1.84	2.75	22.59	5.82	6.16	6.18
50th-Percentile Queue Length [ft]	69.80	389.03	133.26	73.94	145.97	46.05	68.76	564.74	145.47	154.01	154.62
95th-Percentile Queue Length [veh]	5.03	22.71	9.12	5.32	9.80	3.32	4.95	30.72	9.77	10.23	10.26
95th-Percentile Queue Length [ft]	125.63	567.72	227.92	133.09	245.04	82.89	123.78	768.11	244.36	255.77	256.58

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	47.17	69.07	31.64	48.51	29.14	17.82	42.84	63.43	63.43	61.98	20.47	20.47
Movement LOS	D	F	C	D	C	B	D	E	E	E	C	C
d_A, Approach Delay [s/veh]	62.63			29.79			60.59			28.88		
Approach LOS	E			C			E			C		
d_I, Intersection Delay [s/veh]	47.67											
Intersection LOS	D											
Intersection V/C	0.910											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.397

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵↻			↵			↵↻		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	14	287	0	0	212	156	146	0	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	42	0	47	14	0	0	284	0	0	252	36
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	329	0	47	226	156	146	284	17	0	252	36
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	87	0	12	59	41	38	75	4	0	66	9
Total Analysis Volume [veh/h]	15	346	0	49	238	164	154	299	18	0	265	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	21	0	18	29	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	19	19	8	33	2	27	27
g / C, Green / Cycle	0.32	0.32	0.32	0.32	0.32	0.14	0.55	0.04	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.01	0.21	0.05	0.14	0.12	0.10	0.19	0.00	0.09	0.09
s, saturation flow rate [veh/h]	1024	1676	927	1676	1425	1597	1660	1597	1676	1605
c, Capacity [veh/h]	311	531	233	531	451	227	902	63	740	708
d1, Uniform Delay [s]	20.13	17.65	24.40	16.33	15.83	24.45	7.72	0.00	10.30	10.32
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	1.36	0.44	0.59	0.49	3.56	1.08	0.00	0.63	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.05	0.65	0.21	0.45	0.36	0.68	0.35	0.00	0.21	0.21
d, Delay for Lane Group [s/veh]	20.19	19.01	24.84	16.92	16.32	28.01	8.80	0.00	10.93	11.00
Lane Group LOS	C	B	C	B	B	C	A	A	B	B
Critical Lane Group	No	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.16	3.71	0.61	2.32	1.55	2.10	1.93	0.00	1.13	1.12
50th-Percentile Queue Length [ft]	4.02	92.76	15.32	58.02	38.84	52.41	48.31	0.00	28.35	27.91
95th-Percentile Queue Length [veh]	0.29	6.68	1.10	4.18	2.80	3.77	3.48	0.00	2.04	2.01
95th-Percentile Queue Length [ft]	7.24	166.98	27.57	104.44	69.92	94.34	86.95	0.00	51.03	50.23

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	20.19	19.01	19.01	24.84	16.92	16.32	28.01	8.80	8.80	0.00	10.96	11.00
Movement LOS	C	B	B	C	B	B	C	A	A	A	B	B
d_A, Approach Delay [s/veh]	19.06			17.56			15.08			10.97		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	15.91											
Intersection LOS	B											
Intersection V/C	0.397											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	28.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	460	78	254	632	0	0	0	0	146	0	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	93	808	89	119	731	140	85	245	86	99	328	82
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	1268	167	373	1363	140	85	245	86	245	328	184
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	334	44	98	359	37	22	64	23	64	86	48
Total Analysis Volume [veh/h]	98	1335	176	393	1435	147	89	258	91	258	345	194
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	3.6
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	22	0	12	24	0	10	21	0	15	26	12
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.6	3.2	0.0	1.6	3.2	0.0	1.2	2.8	0.0	1.2	2.8	1.6
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.60	4.20	4.20	2.60	4.20	4.20	2.20	3.80	3.80	2.20	3.80	2.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	3.20	3.20	1.60	3.20	3.20	1.20	2.80	2.80	1.20	2.80	0.00
g_i, Effective Green Time [s]	6	26	26	9	29	29	6	9	9	13	16	29
g / C, Green / Cycle	0.09	0.37	0.37	0.13	0.42	0.42	0.09	0.13	0.13	0.18	0.22	0.41
(v / s)_i Volume / Saturation Flow Rate	0.03	0.32	0.32	0.13	0.33	0.33	0.06	0.08	0.06	0.16	0.11	0.14
s, saturation flow rate [veh/h]	3101	3192	1578	3101	3192	1598	1597	3192	1482	1597	3192	1425
c, Capacity [veh/h]	278	1187	587	416	1329	666	140	409	190	292	713	546
d1, Uniform Delay [s]	29.95	20.21	20.22	30.04	17.78	17.83	30.85	28.94	28.34	27.87	23.67	15.41
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.76	7.80	14.51	10.95	4.88	9.56	4.71	1.61	1.87	8.68	0.51	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

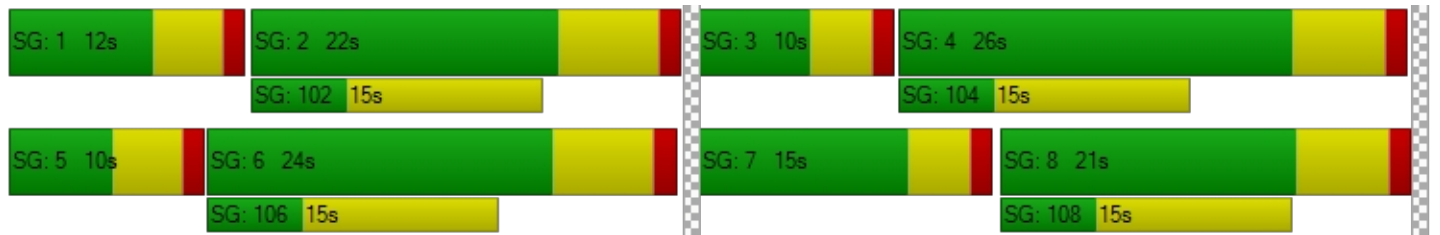
X, volume / capacity	0.35	0.85	0.85	0.94	0.79	0.80	0.64	0.63	0.48	0.88	0.48	0.36
d, Delay for Lane Group [s/veh]	30.71	28.01	34.73	40.99	22.66	27.39	35.55	30.55	30.21	36.56	24.18	15.80
Lane Group LOS	C	C	C	D	C	C	D	C	C	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.76	7.84	8.86	3.67	7.17	8.10	1.54	2.00	1.42	4.57	2.33	2.00
50th-Percentile Queue Length [ft]	18.91	196.05	221.42	91.76	179.37	202.61	38.52	50.09	35.49	114.16	58.19	50.11
95th-Percentile Queue Length [veh]	1.36	12.43	13.74	6.61	11.57	12.77	2.77	3.61	2.56	8.07	4.19	3.61
95th-Percentile Queue Length [ft]	34.03	310.87	343.44	165.16	289.19	319.33	69.33	90.17	63.89	201.77	104.73	90.21

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.71	29.64	34.73	40.99	23.92	27.39	35.55	30.55	30.21	36.56	24.18	15.80
Movement LOS	C	C	C	D	C	C	D	C	C	D	C	B
d_A, Approach Delay [s/veh]	30.26			27.57			31.50			26.15		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.59											
Intersection LOS	C											
Intersection V/C	0.686											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	78.9
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.130

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	45	1118	172	18	817	63	59	204	46	71	82	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	25	732	0	0	204	0	0	240	20	0	280	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	1850	172	18	1021	63	59	444	66	71	362	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	487	45	5	269	17	16	117	17	19	95	3
Total Analysis Volume [veh/h]	74	1947	181	19	1075	66	62	467	69	75	381	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	38	0	10	38	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	40	40	4	38	38	30	30	30	30
g / C, Green / Cycle	0.08	0.50	0.50	0.05	0.47	0.47	0.38	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.05	0.61	0.13	0.01	0.34	0.05	0.07	0.28	0.05	0.51
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	889	1676	1425	918
c, Capacity [veh/h]	126	1594	712	81	1505	672	93	629	534	397
d1, Uniform Delay [s]	35.61	20.02	11.48	36.49	16.85	11.72	39.99	21.66	16.42	26.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.26	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.35	105.53	0.86	1.47	2.93	0.29	7.84	4.18	0.11	103.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.59	1.22	0.25	0.24	0.71	0.10	0.66	0.74	0.13	1.18
d, Delay for Lane Group [s/veh]	39.96	125.55	12.34	37.96	19.78	12.01	47.83	25.84	16.53	130.00
Lane Group LOS	D	F	B	D	B	B	D	C	B	F
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.48	35.73	1.78	0.37	7.42	0.64	1.37	7.56	0.78	18.80
50th-Percentile Queue Length [ft]	37.05	893.31	44.52	9.37	185.52	15.90	34.35	189.01	19.53	470.01
95th-Percentile Queue Length [veh]	2.67	52.41	3.21	0.67	11.89	1.14	2.47	12.07	1.41	28.66
95th-Percentile Queue Length [ft]	66.69	1310.22	80.14	16.87	297.20	28.61	61.83	301.74	35.15	716.50

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.96	125.55	12.34	37.96	19.78	12.01	47.83	25.84	16.53	130.00	130.00	130.00
Movement LOS	D	F	B	D	B	B	D	C	B	F	F	F
d_A, Approach Delay [s/veh]	113.37			19.64			27.05			130.00		
Approach LOS	F			B			C			F		
d_I, Intersection Delay [s/veh]	78.90											
Intersection LOS	E											
Intersection V/C	1.130											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type:	All-way stop	Delay (sec / veh):	107.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.291

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	23	343	25	17	228	15	81	136	26	9	25	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	42	13	0	14	0	0	261	1	9	286	0
Total Hourly Volume [veh/h]	24	385	38	17	242	15	81	397	27	18	311	19
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	101	10	4	64	4	21	104	7	5	82	5
Total Analysis Volume [veh/h]	25	405	40	18	255	16	85	418	28	19	327	20
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	470	386	531	404
Degree of Utilization, x	1.14	0.75	1.29	0.91

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	17.29	6.00	23.45	9.62
95th-Percentile Queue Length [ft]	432.23	149.95	586.29	240.40
Approach Delay [s/veh]	116.19	35.51	174.03	55.00
Approach LOS	F	E	F	F
Intersection Delay [s/veh]	107.13			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.762

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐			⇐⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	220.00	100.00	970.00	200.00	100.00	100.00	30.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	2	657	43	82	860	4	10	7	6	44	3	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	122	860	47	37	766	63	45	118	99	56	150	39
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	1517	90	119	1626	67	55	125	105	100	153	94
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	399	24	31	428	18	14	33	28	26	40	25
Total Analysis Volume [veh/h]	131	1597	95	125	1712	71	58	132	111	105	161	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	45	0	13	45	0	21	28	0	14	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	11	59	59	11	59	59	6	12	12	9	15	15
g / C, Green / Cycle	0.11	0.59	0.59	0.11	0.59	0.59	0.06	0.12	0.12	0.09	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.08	0.35	0.35	0.08	0.53	0.54	0.04	0.04	0.07	0.07	0.10	0.07
s, saturation flow rate [veh/h]	1597	3192	1629	1597	1676	1653	1597	3192	1482	1597	1676	1425
c, Capacity [veh/h]	176	1895	967	174	994	980	102	398	185	148	257	218
d1, Uniform Delay [s]	43.14	12.72	12.73	43.06	17.73	17.99	45.45	39.95	41.40	44.07	39.65	38.52
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.17	1.36	2.66	5.46	12.51	13.78	4.87	0.48	3.10	6.17	2.50	1.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	0.59	0.59	0.72	0.90	0.91	0.57	0.33	0.60	0.71	0.63	0.45
d, Delay for Lane Group [s/veh]	49.31	14.08	15.39	48.52	30.23	31.77	50.32	40.44	44.50	50.24	42.15	39.99
Lane Group LOS	D	B	B	D	C	C	D	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	3.35	7.19	7.71	3.17	18.61	19.12	1.50	1.47	2.68	2.71	3.77	2.24
50th-Percentile Queue Length [ft]	83.82	179.84	192.73	79.19	465.32	478.05	37.60	36.80	66.96	67.79	94.30	55.89
95th-Percentile Queue Length [veh]	6.03	11.59	12.26	5.70	25.69	26.29	2.71	2.65	4.82	4.88	6.79	4.02
95th-Percentile Queue Length [ft]	150.87	289.80	306.57	142.54	642.20	657.34	67.67	66.24	120.52	122.02	169.74	100.60

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	49.31	14.47	15.39	48.52	30.97	31.77	50.32	40.44	44.50	50.24	42.15	39.99
Movement LOS	D	B	B	D	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	17.02			32.15			43.84			43.89		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	27.65											
Intersection LOS	C											
Intersection V/C	0.762											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	34.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	185.00	100.00	50.00	165.00	100.00	165.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	84	1062	18	11	837	88	284	220	142	16	37	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	34	757	0	0	224	0	0	18	25	0	14	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	118	1819	18	11	1061	88	284	238	167	16	51	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	479	5	3	279	23	75	63	44	4	13	1
Total Analysis Volume [veh/h]	124	1915	19	12	1117	93	299	251	176	17	54	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	35	46	0	10	21	0	43	52	0	12	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	12	74	74	4	66	66	26	30	30	4	8
g / C, Green / Cycle	0.10	0.62	0.62	0.03	0.55	0.55	0.21	0.25	0.25	0.04	0.07
(v / s)_i Volume / Saturation Flow Rate	0.08	0.60	0.01	0.01	0.35	0.07	0.19	0.15	0.12	0.01	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1482	1597	1652
c, Capacity [veh/h]	165	1973	881	52	1746	779	340	413	365	59	115
d1, Uniform Delay [s]	52.29	21.88	8.87	56.61	18.95	13.18	45.70	40.09	38.68	56.27	53.85
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.15	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.69	14.43	0.05	2.27	1.81	0.31	9.59	1.45	0.99	2.69	3.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

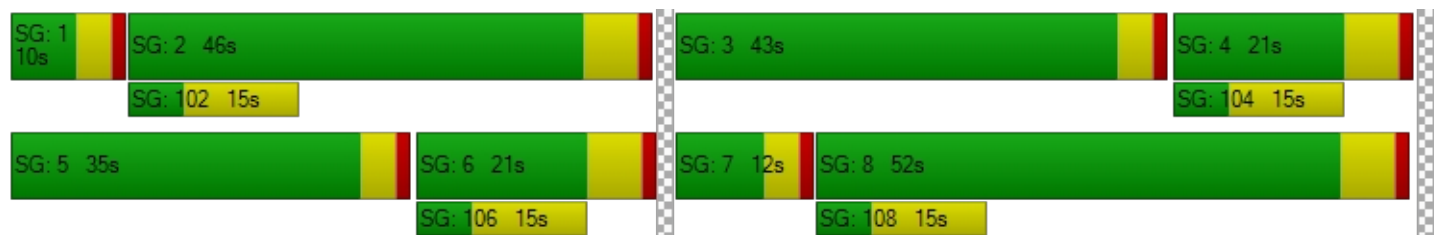
X, volume / capacity	0.75	0.97	0.02	0.23	0.64	0.12	0.88	0.61	0.48	0.29	0.51
d, Delay for Lane Group [s/veh]	58.98	36.31	8.92	58.87	20.76	13.49	55.28	41.54	39.67	58.96	57.35
Lane Group LOS	E	D	A	E	C	B	E	D	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.88	26.40	0.19	0.38	10.52	1.24	9.33	6.60	4.45	0.54	1.81
50th-Percentile Queue Length [ft]	96.94	659.91	4.79	9.55	263.11	30.89	233.20	165.00	111.33	13.46	45.14
95th-Percentile Queue Length [veh]	6.98	34.82	0.34	0.69	15.84	2.22	14.34	10.81	7.91	0.97	3.25
95th-Percentile Queue Length [ft]	174.49	870.55	8.62	17.20	396.12	55.60	358.43	270.33	197.85	24.22	81.25

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	58.98	36.31	8.92	58.87	20.76	13.49	55.28	41.54	39.67	58.96	57.35	57.35
Movement LOS	E	D	A	E	C	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	37.42			20.58			46.75			57.71		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	34.42											
Intersection LOS	C											
Intersection V/C	0.830											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	All-way stop	Delay (sec / veh):	13.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.529

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	17	241	9	20	200	34	105	64	44	9	18	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	54	0	0	23	1	0	16	2	0	12	1
Total Hourly Volume [veh/h]	18	295	9	20	223	35	105	80	46	9	30	21
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	78	2	5	59	9	28	21	12	2	8	6
Total Analysis Volume [veh/h]	19	311	9	21	235	37	111	84	48	9	32	22
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	641	639	597	569
Degree of Utilization, x	0.53	0.46	0.41	0.11

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	3.11	2.41	1.97	0.37
95th-Percentile Queue Length [ft]	77.86	60.26	49.37	9.28
Approach Delay [s/veh]	14.76	13.33	13.13	10.11
Approach LOS	B	B	B	B
Intersection Delay [s/veh]	13.58			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	65.3
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.084

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	706	4	474	0	1366	521	225	1191	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	395	0	0	286	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	706	4	474	0	1761	521	225	1477	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	186	1	125	0	463	137	59	389	0	0	0	0
Total Analysis Volume [veh/h]	743	4	499	0	1854	548	237	1555	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	40	0	0	59	0	11	70	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	38	38	38	57	57	9	68
g / C, Green / Cycle	0.35	0.35	0.35	0.52	0.52	0.08	0.62
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.39	0.57	0.60	0.09	0.38
s, saturation flow rate [veh/h]	1416	1417	1264	2831	1327	2750	4050
c, Capacity [veh/h]	489	489	437	1467	687	225	2504
d1, Uniform Delay [s]	32.00	32.00	36.00	26.50	26.50	50.50	13.01
k, delay calibration	0.34	0.34	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.49	7.46	88.30	52.64	89.43	43.02	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

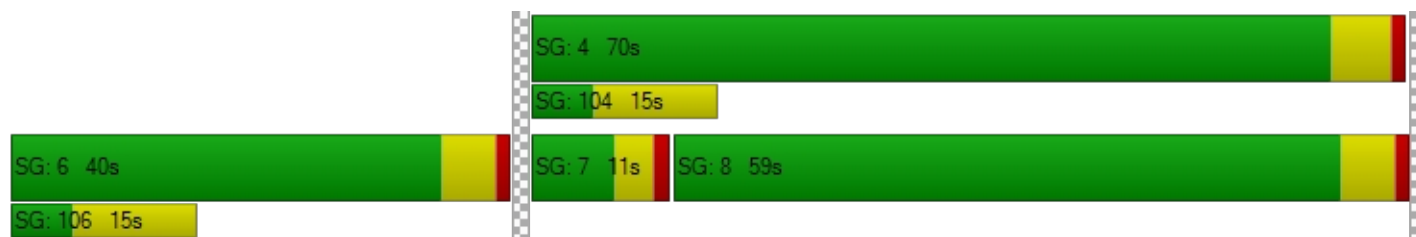
X, volume / capacity	0.76	0.76	1.14	1.09	1.16	1.05	0.62
d, Delay for Lane Group [s/veh]	39.49	39.46	124.30	79.14	115.93	93.52	14.18
Lane Group LOS	D	D	F	F	F	F	B
Critical Lane Group	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	9.47	9.47	21.82	28.06	33.32	4.37	7.28
50th-Percentile Queue Length [ft]	236.76	236.65	545.60	701.43	833.06	109.33	181.96
95th-Percentile Queue Length [veh]	14.52	14.51	32.07	39.30	47.87	7.87	11.70
95th-Percentile Queue Length [ft]	362.93	362.79	801.65	982.41	1196.85	196.79	292.58

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.48	39.46	124.30	0.00	84.15	115.93	93.52	14.18	0.00	0.00	0.00	0.00
Movement LOS	D	D	F		F	F	F	B				
d_A, Approach Delay [s/veh]	73.45			91.40			24.68			0.00		
Approach LOS	E			F			C			A		
d_I, Intersection Delay [s/veh]	65.31											
Intersection LOS	E											
Intersection V/C	1.084											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	98.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.079

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Base Volume Input [veh/h]	372	108	189	83	0	423	295	1490	298	0	1372	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	395	0	0	286	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	372	108	189	83	0	423	295	1885	298	0	1658	36
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	98	28	50	22	0	111	78	496	78	0	436	9
Total Analysis Volume [veh/h]	392	114	199	87	0	445	311	1984	314	0	1745	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	34	0	23	23	55	0	0	32	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No			No	No			No	
Maximum Recall		No		No			No	No			No	
Pedestrian Recall		No		No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	32	32	21	53	30	30
g / C, Green / Cycle	0.17	0.17	0.17	0.29	0.29	0.19	0.48	0.27	0.27
(v / s)_j Volume / Saturation Flow Rate	0.18	0.18	0.16	0.06	0.35	0.22	0.49	0.33	0.30
s, saturation flow rate [veh/h]	1416	1447	1264	1416	1264	1416	4050	4050	1465
c, Capacity [veh/h]	245	250	218	412	368	270	1952	1105	400
d1, Uniform Delay [s]	45.50	45.50	44.67	29.46	39.00	44.50	28.50	40.00	40.00
k, delay calibration	0.19	0.19	0.14	0.11	0.50	0.31	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	42.39	40.64	16.78	0.25	117.35	90.98	24.61	103.33	80.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

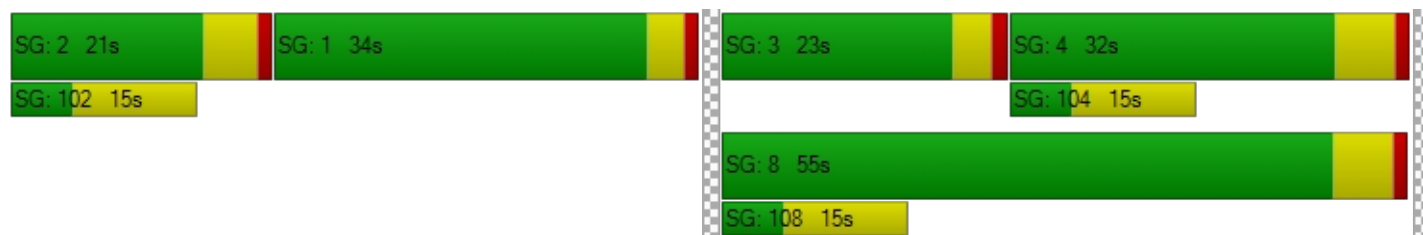
X, volume / capacity	1.03	1.02	0.91	0.21	1.21	1.15	1.02	1.21	1.12
d, Delay for Lane Group [s/veh]	87.89	86.14	61.45	29.72	156.35	135.48	53.11	143.33	120.25
Lane Group LOS	F	F	E	C	F	F	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	9.37	9.45	6.20	1.73	21.49	13.98	20.14	20.13	19.28
50th-Percentile Queue Length [ft]	234.18	236.24	154.98	43.20	537.23	349.45	503.38	503.27	482.01
95th-Percentile Queue Length [veh]	14.56	14.64	10.28	3.11	32.41	21.53	27.84	30.53	28.23
95th-Percentile Queue Length [ft]	364.05	365.96	257.07	77.76	810.20	538.23	696.08	763.33	705.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	87.26	86.14	61.45	29.72	0.00	156.35	135.48	53.11	0.00	0.00	137.94	120.25
Movement LOS	F	F	E	C		F	F	F			F	F
d_A, Approach Delay [s/veh]	79.79			135.64			64.28			137.56		
Approach LOS	E			F			E			F		
d_I, Intersection Delay [s/veh]	98.06											
Intersection LOS	F											
Intersection V/C	1.079											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.774

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	61	472	57	38	437	122	87	905	106	53	742	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	395	0	0	286	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	472	57	38	437	122	87	1300	106	53	1028	48
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	124	15	10	115	32	23	342	28	14	271	13
Total Analysis Volume [veh/h]	64	497	60	40	460	128	92	1368	112	56	1082	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	28	0	11	23	0	11	28	16	33	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	26	26	6	25	25	9	54	63	6	51	51
g / C, Green / Cycle	0.07	0.26	0.26	0.06	0.25	0.25	0.09	0.54	0.63	0.06	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.05	0.18	0.05	0.03	0.20	0.21	0.06	0.48	0.05	0.04	0.38	0.38
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1377	1416	2831	2237	1416	1487	1464
c, Capacity [veh/h]	98	743	332	79	370	343	127	1524	1355	90	761	749
d1, Uniform Delay [s]	45.39	33.00	28.56	45.87	35.43	35.52	44.29	20.61	8.19	45.67	19.33	19.34
k, delay calibration	0.11	0.11	0.11	0.11	0.22	0.22	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.22	1.05	0.26	4.93	8.68	9.91	7.52	8.69	0.03	6.90	6.69	6.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

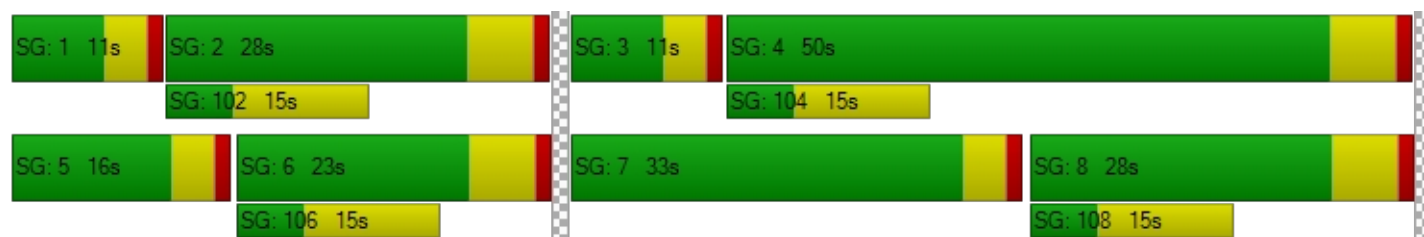
X, volume / capacity	0.65	0.67	0.18	0.51	0.82	0.83	0.72	0.90	0.08	0.62	0.75	0.75
d, Delay for Lane Group [s/veh]	52.60	34.05	28.82	50.80	44.11	45.42	51.81	29.30	8.22	52.57	26.01	26.14
Lane Group LOS	D	C	C	D	D	D	D	C	A	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.71	5.28	1.10	1.05	7.58	7.21	2.42	14.35	0.45	1.50	10.88	10.75
50th-Percentile Queue Length [ft]	42.65	131.94	27.60	26.27	189.55	180.34	60.62	358.85	11.32	37.40	271.99	268.63
95th-Percentile Queue Length [veh]	3.07	9.05	1.99	1.89	12.10	11.62	4.36	20.57	0.82	2.69	16.29	16.12
95th-Percentile Queue Length [ft]	76.77	226.13	49.68	47.28	302.45	290.46	109.12	514.18	20.38	67.32	407.23	403.02

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.60	34.05	28.82	50.80	44.55	45.42	51.81	29.30	8.22	52.57	26.08	26.14
Movement LOS	D	C	C	D	D	D	D	C	A	D	C	C
d_A, Approach Delay [s/veh]	35.46			45.13			29.11			27.33		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	32.07											
Intersection LOS	C											
Intersection V/C	0.774											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	48.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.891

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	70	844	366	81	708	152	242	680	103	241	454	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	395	0	0	286	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	844	366	81	708	152	242	1075	103	241	740	71
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	222	96	21	186	40	64	283	27	63	195	19
Total Analysis Volume [veh/h]	74	888	385	85	745	160	255	1132	108	254	779	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	28	0	12	30	0	19	40	0	10	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	28	28	8	29	29	17	38	38	8	29	29
g / C, Green / Cycle	0.08	0.31	0.31	0.09	0.32	0.32	0.19	0.42	0.42	0.09	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.05	0.31	0.30	0.06	0.26	0.13	0.18	0.42	0.43	0.09	0.28	0.06
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1442	2750	2831	1264
c, Capacity [veh/h]	109	887	396	122	913	408	271	625	606	251	907	405
d1, Uniform Delay [s]	40.47	30.89	30.50	40.00	28.03	23.64	35.89	26.08	26.08	40.89	28.67	22.09
k, delay calibration	0.11	0.11	0.39	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.26	14.18	33.40	7.06	1.84	0.61	15.24	36.62	39.40	29.19	10.36	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

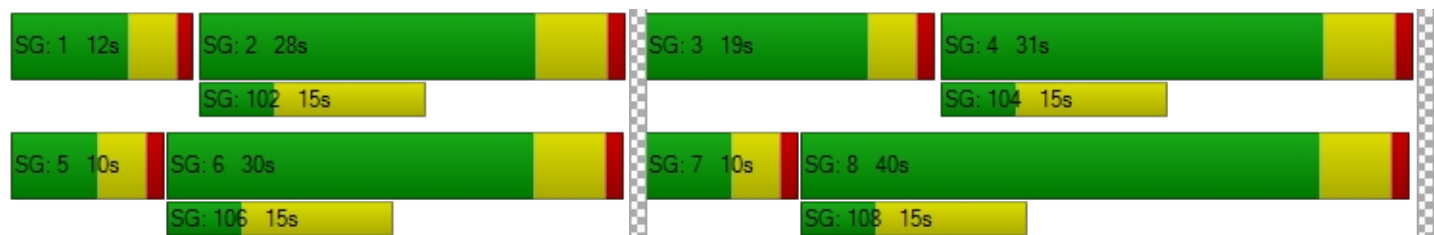
X, volume / capacity	0.68	1.00	0.97	0.70	0.82	0.39	0.94	1.00	1.01	1.01	0.86	0.19
d, Delay for Lane Group [s/veh]	47.73	45.08	63.91	47.06	29.87	24.26	51.13	62.70	65.48	70.08	39.03	23.10
Lane Group LOS	D	F	E	D	C	C	D	F	F	F	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.76	10.68	11.33	2.00	7.10	2.56	6.40	18.37	18.29	3.70	8.63	1.20
50th-Percentile Queue Length [ft]	44.02	266.97	283.16	50.08	177.60	63.98	160.09	459.33	457.16	92.50	215.84	30.01
95th-Percentile Queue Length [veh]	3.17	16.04	16.85	3.61	11.48	4.61	10.55	25.45	25.51	6.66	13.45	2.16
95th-Percentile Queue Length [ft]	79.24	401.10	421.14	90.14	286.88	115.16	263.84	636.27	637.70	166.50	336.31	54.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	47.73	45.08	63.91	47.06	29.87	24.26	51.13	63.94	65.48	70.08	39.03	23.10
Movement LOS	D	F	E	D	C	C	D	E	E	F	D	C
d_A, Approach Delay [s/veh]	50.61			30.44			61.87			45.07		
Approach LOS	D			C			E			D		
d_I, Intersection Delay [s/veh]	48.73											
Intersection LOS	D											
Intersection V/C	0.891											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.467

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	180.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	28	74	30	85	97	108	137	901	37	24	386	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	395	0	0	286	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	74	30	85	97	108	137	1296	37	24	672	50
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	19	8	22	26	28	36	341	10	6	177	13
Total Analysis Volume [veh/h]	29	78	32	89	102	114	144	1364	39	25	707	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	18	29	0	10	21	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	9	9	7	11	11	10	42	42	4	37	37
g / C, Green / Cycle	0.06	0.13	0.13	0.09	0.16	0.16	0.14	0.61	0.61	0.06	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.03	0.06	0.07	0.09	0.10	0.33	0.33	0.02	0.25	0.04
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1466	1416	2831	1264
c, Capacity [veh/h]	89	187	159	134	235	200	198	1715	888	84	1487	664
d1, Uniform Delay [s]	31.40	28.23	27.44	30.59	26.63	27.26	28.84	8.08	8.08	31.52	10.51	8.23
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	1.48	0.61	5.47	1.26	2.55	5.07	1.22	2.35	1.95	1.09	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.33	0.42	0.20	0.66	0.43	0.57	0.73	0.54	0.54	0.30	0.48	0.08
d, Delay for Lane Group [s/veh]	33.51	29.70	28.06	36.06	27.89	29.81	33.92	9.30	10.43	33.47	11.60	8.46
Lane Group LOS	C	C	C	D	C	C	C	A	B	C	B	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.49	1.20	0.48	1.56	1.51	1.78	2.42	3.25	3.64	0.43	3.00	0.37
50th-Percentile Queue Length [ft]	12.33	30.04	11.90	38.98	37.76	44.39	60.62	81.27	91.10	10.65	74.90	9.22
95th-Percentile Queue Length [veh]	0.89	2.16	0.86	2.81	2.72	3.20	4.36	5.85	6.56	0.77	5.39	0.66
95th-Percentile Queue Length [ft]	22.19	54.08	21.41	70.17	67.98	79.91	109.12	146.28	163.97	19.17	134.81	16.59

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.51	29.70	28.06	36.06	27.89	29.81	33.92	9.67	10.43	33.47	11.60	8.46
Movement LOS	C	C	C	D	C	C	C	A	B	C	B	A
d_A, Approach Delay [s/veh]	30.12			31.00			11.94			12.08		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	14.99											
Intersection LOS	B											
Intersection V/C	0.467											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.902

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	99	902	55	61	865	111	216	371	159	34	172	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	81	790	4	3	247	0	0	378	40	3	262	2
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	180	1692	59	64	1112	111	216	749	199	37	434	38
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	445	16	17	293	29	57	197	52	10	114	10
Total Analysis Volume [veh/h]	189	1781	62	67	1171	117	227	788	209	39	457	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	31	0	10	31	0	0	39	0	0	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	31	31	6	29	29	37	37	37	37	37	37
g / C, Green / Cycle	0.10	0.39	0.39	0.08	0.36	0.36	0.46	0.46	0.46	0.46	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.06	0.39	0.04	0.04	0.26	0.08	0.28	0.47	0.15	0.06	0.15	0.15
s, saturation flow rate [veh/h]	3101	4567	1425	1597	4567	1425	807	1676	1425	616	1676	1630
c, Capacity [veh/h]	303	1759	549	124	1666	520	376	775	659	90	775	754
d1, Uniform Delay [s]	34.68	24.60	15.81	35.54	21.70	17.58	23.16	21.50	13.54	40.00	13.59	13.61
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.22	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.10	24.65	0.42	3.66	2.51	1.00	3.10	36.45	0.27	3.26	0.24	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

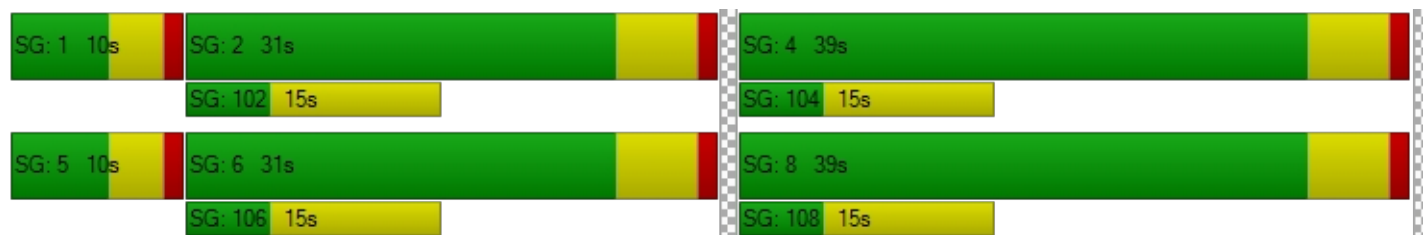
X, volume / capacity	0.62	1.01	0.11	0.54	0.70	0.23	0.60	1.02	0.32	0.43	0.32	0.33
d, Delay for Lane Group [s/veh]	36.78	49.25	16.23	39.20	24.21	18.59	26.26	57.95	13.82	43.26	13.83	13.86
Lane Group LOS	D	F	B	D	C	B	C	F	B	D	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	1.77	13.84	0.73	1.33	6.04	1.52	3.80	20.27	2.16	0.82	2.60	2.54
50th-Percentile Queue Length [ft]	44.26	346.07	18.30	33.18	151.10	37.96	94.94	506.68	53.95	20.45	64.91	63.55
95th-Percentile Queue Length [veh]	3.19	20.12	1.32	2.39	10.08	2.73	6.84	27.99	3.88	1.47	4.67	4.58
95th-Percentile Queue Length [ft]	79.68	502.91	32.94	59.73	251.90	68.33	170.89	699.77	97.11	36.81	116.83	114.39

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	36.78	49.25	16.23	39.20	24.21	18.59	26.26	57.95	13.82	43.26	13.84	13.86
Movement LOS	D	F	B	D	C	B	C	F	B	D	B	B
d_A, Approach Delay [s/veh]	47.08			24.47			44.54			15.99		
Approach LOS	D			C			D			B		
d_I, Intersection Delay [s/veh]	37.29											
Intersection LOS	D											
Intersection V/C	0.902											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	All-way stop	Delay (sec / veh):	321.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.236

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	12	177	52	61	173	33	48	401	17	28	189	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	53	16	3	22	0	0	427	0	14	298	2
Total Hourly Volume [veh/h]	12	230	68	64	195	33	48	828	17	42	487	19
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	61	18	17	51	9	13	218	4	11	128	5
Total Analysis Volume [veh/h]	13	242	72	67	205	35	51	872	18	44	513	20
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	405	397	941	577
Degree of Utilization, x	0.81	0.77	2.24	1.37

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	7.22	6.50	70.07	27.40
95th-Percentile Queue Length [ft]	180.54	162.42	1751.68	684.95
Approach Delay [s/veh]	40.00	37.00	583.04	205.50
Approach LOS	E	E	F	F
Intersection Delay [s/veh]	321.40			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	144.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.267

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	500.00	100.00	280.00	320.00	100.00	75.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	40.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	43	544	164	36	812	52	97	314	115	256	145	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	293	1312	382	16	1160	117	96	358	310	335	271	12
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	336	1856	546	52	1972	169	193	672	425	591	416	47
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	488	144	14	519	44	51	177	112	156	109	12
Total Analysis Volume [veh/h]	354	1954	575	55	2076	178	203	707	447	622	438	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	13	58	20	13	58	0	12	29	13	20	37	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	11	60	60	7	56	56	10	27	27	18	35	35
g / C, Green / Cycle	0.09	0.50	0.50	0.06	0.47	0.47	0.08	0.23	0.23	0.15	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.11	0.61	0.40	0.03	0.65	0.12	0.07	0.22	0.30	0.20	0.26	0.03
s, saturation flow rate [veh/h]	3101	3192	1425	1597	3192	1425	3101	3192	1482	3101	1676	1425
c, Capacity [veh/h]	284	1597	713	93	1490	665	258	718	333	465	489	416
d1, Uniform Delay [s]	54.50	29.98	25.11	55.14	32.00	19.50	53.95	46.29	46.50	51.00	40.75	31.18
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11	0.46	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	117.02	106.42	9.49	5.95	181.33	0.99	5.23	12.37	172.15	155.05	20.19	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

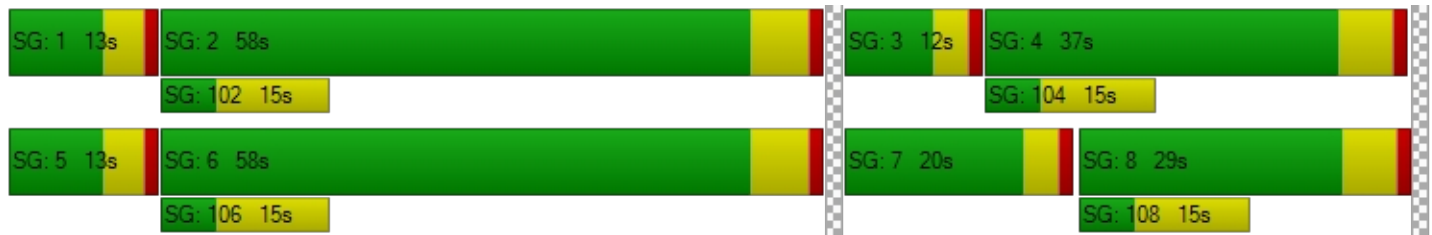
X, volume / capacity	1.25	1.22	0.81	0.59	1.39	0.27	0.79	0.98	1.34	1.34	0.90	0.12
d, Delay for Lane Group [s/veh]	171.52	136.40	34.60	61.09	213.33	20.49	59.18	58.66	218.65	206.05	60.94	31.30
Lane Group LOS	F	F	C	E	F	C	E	E	F	F	E	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	8.83	44.86	14.70	1.74	57.36	3.07	3.12	11.35	25.53	16.79	14.63	1.03
50th-Percentile Queue Length [ft]	220.86	1121.53	367.54	43.49	1434.07	76.83	77.98	283.64	638.17	419.80	365.68	25.79
95th-Percentile Queue Length [veh]	14.76	64.54	20.99	3.13	86.21	5.53	5.61	16.87	39.02	26.49	20.90	1.86
95th-Percentile Queue Length [ft]	369.03	1613.56	524.75	78.27	2155.18	138.29	140.37	421.74	975.50	662.23	522.48	46.43

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	171.52	136.40	34.60	61.09	213.33	20.49	59.18	58.66	218.65	206.05	60.94	31.30
Movement LOS	F	F	C	E	F	C	E	E	F	F	E	C
d_A, Approach Delay [s/veh]	120.41			194.84			111.44			141.02		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	144.24											
Intersection LOS	F											
Intersection V/C	1.267											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	161.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.219

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	240.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	70	241	141	281	374	39	28	355	179	296	295	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	36	450	427	175	395	208	109	1493	85	269	1834	196
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	691	568	456	769	247	137	1848	264	565	2129	267
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	182	149	120	202	65	36	486	69	149	560	70
Total Analysis Volume [veh/h]	112	727	598	480	809	260	144	1945	278	595	2241	281
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups			2,7									1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	27	20	17	34	0	11	56	0	20	65	17
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	8	25	45	15	32	32	9	54	54	18	63	80
g / C, Green / Cycle	0.07	0.21	0.38	0.13	0.27	0.27	0.08	0.45	0.45	0.15	0.53	0.67
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.42	0.15	0.33	0.34	0.09	0.61	0.20	0.19	0.70	0.20
s, saturation flow rate [veh/h]	1597	3192	1425	3101	1676	1540	1597	3192	1425	3101	3192	1425
c, Capacity [veh/h]	106	665	508	388	447	411	120	1436	641	465	1676	924
d1, Uniform Delay [s]	56.00	47.50	38.60	52.50	44.00	44.00	55.50	33.00	22.55	51.00	28.50	9.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.27	0.11	0.11	0.26	0.30
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	54.97	63.07	98.50	112.28	121.36	137.36	107.49	161.84	0.46	129.40	153.92	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.05	1.09	1.18	1.24	1.23	1.26	1.20	1.35	0.43	1.28	1.34	0.30
d, Delay for Lane Group [s/veh]	110.97	110.57	137.10	164.78	165.36	181.36	162.99	194.84	23.01	180.40	182.42	9.75
Lane Group LOS	F	F	F	F	F	F	F	F	C	F	F	A
Critical Lane Group	Yes	No	Yes	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	4.79	15.51	28.21	11.76	27.94	27.50	7.13	51.87	5.26	15.20	57.87	3.06
50th-Percentile Queue Length [ft]	119.82	387.66	705.28	294.12	698.46	687.42	178.37	1296.70	131.54	379.94	1446.68	76.60
95th-Percentile Queue Length [veh]	8.51	23.03	41.03	18.91	41.09	41.04	12.20	77.34	9.02	23.94	85.85	5.51
95th-Percentile Queue Length [ft]	212.86	575.67	1025.63	472.69	1027.24	1025.91	304.96	1933.58	225.59	598.52	2146.25	137.87

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	110.97	110.57	137.10	164.78	170.50	181.36	162.99	194.84	23.01	180.40	182.42	9.75
Movement LOS	F	F	F	F	F	F	F	F	C	F	F	A
d_A, Approach Delay [s/veh]	121.64			170.55			172.72			166.47		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	161.36											
Intersection LOS	F											
Intersection V/C	1.219											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	64.3
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.050

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵↵		↑↑↑		↑↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	318	500	0	495	198	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	1060	0	1559	809	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	1560	0	2054	1007	0
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	411	0	541	265	0
Total Analysis Volume [veh/h]	335	1642	0	2162	1060	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.4	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	38	0	0	32	32	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	C	C
C, Cycle Length [s]	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	36	36	36	30	30
g / C, Green / Cycle	0.51	0.51	0.51	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.21	0.58	0.58	0.47	0.33
s, saturation flow rate [veh/h]	1597	1425	1425	4567	3192
c, Capacity [veh/h]	821	733	733	1957	1368
d1, Uniform Delay [s]	10.45	17.00	17.00	20.00	17.11
k, delay calibration	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	71.45	71.45	55.36	4.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.41	1.12	1.12	1.10	0.77
d, Delay for Lane Group [s/veh]	10.78	88.45	88.45	75.36	21.45
Lane Group LOS	B	F	F	F	C
Critical Lane Group	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	2.86	24.44	24.44	19.42	7.35
50th-Percentile Queue Length [ft]	71.39	611.10	611.10	485.60	183.83
95th-Percentile Queue Length [veh]	5.14	35.39	35.39	28.53	11.80
95th-Percentile Queue Length [ft]	128.50	884.68	884.68	713.15	295.01

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	10.78	88.45	0.00	75.36	21.45	0.00
Movement LOS	B	F		F	C	
d_A, Approach Delay [s/veh]	75.29		75.36		21.45	
Approach LOS	E		E		C	
d_I, Intersection Delay [s/veh]	64.34					
Intersection LOS	E					
Intersection V/C	1.050					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	74.6
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.433

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	95	81	468	380	241	272
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	567	0	217	1293	0	252
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	662	81	685	1673	241	524
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	174	21	180	440	63	138
Total Analysis Volume [veh/h]	697	85	721	1761	254	552
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	39	0	51	39	0	51
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	37	37	37	49	88	49	49
g / C, Green / Cycle	0.41	0.41	0.41	0.54	0.98	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.06	0.16	1.24	0.20	0.12
s, saturation flow rate [veh/h]	1597	1597	1425	4567	1425	1274	4567
c, Capacity [veh/h]	656	656	586	2486	1333	652	2486
d1, Uniform Delay [s]	19.96	19.96	16.60	11.09	2.90	17.06	10.62
k, delay calibration	0.15	0.15	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.92	0.92	0.11	0.30	149.77	1.75	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

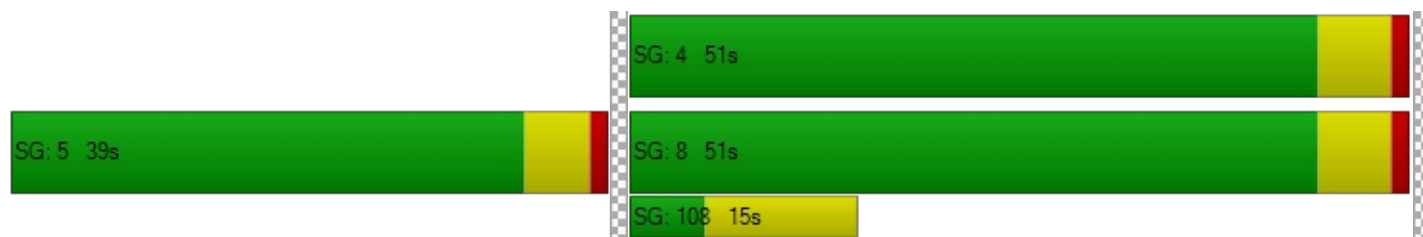
X, volume / capacity	0.53	0.53	0.15	0.29	1.32	0.39	0.22
d, Delay for Lane Group [s/veh]	20.88	20.88	16.71	11.39	152.67	18.81	10.83
Lane Group LOS	C	C	B	B	F	B	B
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	5.44	5.44	1.09	2.50	55.46	1.89	1.83
50th-Percentile Queue Length [ft]	136.12	136.12	27.21	62.38	1386.59	47.15	45.69
95th-Percentile Queue Length [veh]	9.27	9.27	1.96	4.49	85.30	3.39	3.29
95th-Percentile Queue Length [ft]	231.80	231.80	48.98	112.28	2132.40	84.87	82.24

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	20.88	16.71	11.39	152.67	18.81	10.83
Movement LOS	C	B	B	F	B	B
d_A, Approach Delay [s/veh]	20.43		111.63		13.35	
Approach LOS	C		F		B	
d_I, Intersection Delay [s/veh]	74.64					
Intersection LOS	E					
Intersection V/C	0.433					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.811

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	75.00	140.00	100.00	70.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	98	980	8	15	1018	49	46	42	185	0	6	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	52	840	0	54	236	0	0	8	48	0	5	34
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	1820	8	69	1254	49	46	50	233	0	11	42
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	479	2	18	330	13	12	13	61	0	3	11
Total Analysis Volume [veh/h]	158	1916	8	73	1320	52	48	53	245	0	12	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	39	0	40	64	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	68	68	7	62	62	19	19	19	19	19
g / C, Green / Cycle	0.13	0.68	0.68	0.07	0.62	0.62	0.19	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.10	0.60	0.01	0.05	0.41	0.04	0.04	0.03	0.17	0.00	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1208	1676	1482	1211	1472
c, Capacity [veh/h]	202	2163	966	116	1990	888	251	319	282	258	280
d1, Uniform Delay [s]	42.32	13.00	5.23	45.09	12.10	7.36	37.80	33.88	39.30	0.00	34.10
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.12	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.44	5.80	0.02	5.59	1.76	0.13	0.37	0.24	8.98	0.00	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

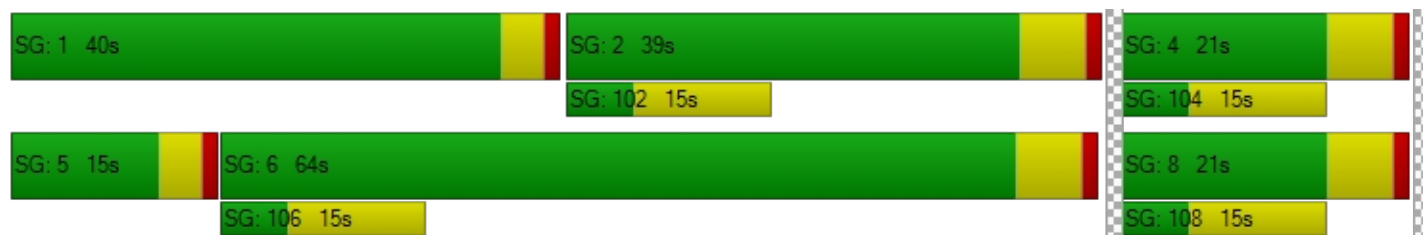
X, volume / capacity	0.78	0.89	0.01	0.63	0.66	0.06	0.19	0.17	0.87	0.00	0.20
d, Delay for Lane Group [s/veh]	48.76	18.80	5.24	50.67	13.86	7.49	38.16	34.12	48.29	0.00	34.45
Lane Group LOS	D	B	A	D	B	A	D	C	D	A	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	4.11	16.23	0.05	1.90	8.51	0.42	1.04	1.07	6.33	0.00	1.14
50th-Percentile Queue Length [ft]	102.75	405.66	1.32	47.43	212.65	10.39	26.04	26.76	158.18	0.00	28.56
95th-Percentile Queue Length [veh]	7.40	22.83	0.10	3.41	13.29	0.75	1.88	1.93	10.45	0.00	2.06
95th-Percentile Queue Length [ft]	184.95	570.82	2.38	85.37	332.23	18.70	46.88	48.16	261.32	0.00	51.41

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	48.76	18.80	5.24	50.67	13.86	7.49	38.16	34.12	48.29	0.00	34.45	34.45
Movement LOS	D	B	A	D	B	A	D	C	D	A	C	C
d_A, Approach Delay [s/veh]	21.02			15.49			44.71			34.45		
Approach LOS	C			B			D			C		
d_I, Intersection Delay [s/veh]	21.26											
Intersection LOS	C											
Intersection V/C	0.811											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	18.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.103

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	2	208	0	3	197	8	27	0	21	1	3	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	100	30	0	50	0	0	62	0	30	39	0
Total Hourly Volume [veh/h]	2	308	30	3	247	8	27	62	21	31	42	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	81	8	1	65	2	7	16	6	8	11	1
Total Analysis Volume [veh/h]	2	324	32	3	260	8	28	65	22	33	44	5
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.16	0.03	0.10	0.11	0.01
d_M, Delay for Movement [s/veh]	7.78	0.00	0.00	8.00	0.00	0.00	18.35	17.22	12.79	18.95	16.62	12.81
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh]	1.13	1.13	1.13	0.87	0.87	0.87	1.09	1.09	1.09	0.83	0.83	0.83
95th-Percentile Queue Length [ft]	28.36	28.36	28.36	21.65	21.65	21.65	27.20	27.20	27.20	20.63	20.63	20.63
d_A, Approach Delay [s/veh]	0.04			0.09			16.65			17.33		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.09											
Intersection LOS	C											

**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

**Intersection Setup**

Name	Northbound		Eucalyptus Ave		Westbound	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eucalyptus Ave		Westbound	
Base Volume Input [veh/h]	9	4	1	6	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	82	0	0	69
Total Hourly Volume [veh/h]	9	4	83	6	0	69
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	22	2	0	18
Total Analysis Volume [veh/h]	9	4	87	6	0	73
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.58	8.93	0.00	0.00	7.53	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.05	0.05	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	1.18	1.18	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.38		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.68					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	0	0	0	2	0	0
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	1	1045	159	239	851	1	17	37	7	116	1	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	204	158	180	74	0	0	0	0	407	0	688
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1249	317	419	925	1	17	37	7	523	1	789
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	329	83	110	243	0	4	10	2	138	0	208
Total Analysis Volume [veh/h]	1	1315	334	441	974	1	18	39	7	551	1	831
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	11	21	0	16	26	0	0	23	0	0	23	16
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	L	C	R
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	2	19	19	14	31	31	21	21	21	37
g / C, Green / Cycle	0.04	0.32	0.32	0.23	0.51	0.51	0.35	0.35	0.35	0.62
(v / s)_i Volume / Saturation Flow Rate	0.00	0.29	0.23	0.14	0.20	0.20	0.04	0.23	0.00	0.58
s, saturation flow rate [veh/h]	1597	4567	1425	3101	3192	1676	1604	2367	1676	1425
c, Capacity [veh/h]	64	1446	451	723	1629	855	638	849	587	827
d1, Uniform Delay [s]	27.68	19.67	18.30	20.56	9.00	9.00	13.17	18.72	12.68	12.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	10.02	10.43	0.84	0.71	1.35	0.07	0.84	0.00	32.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

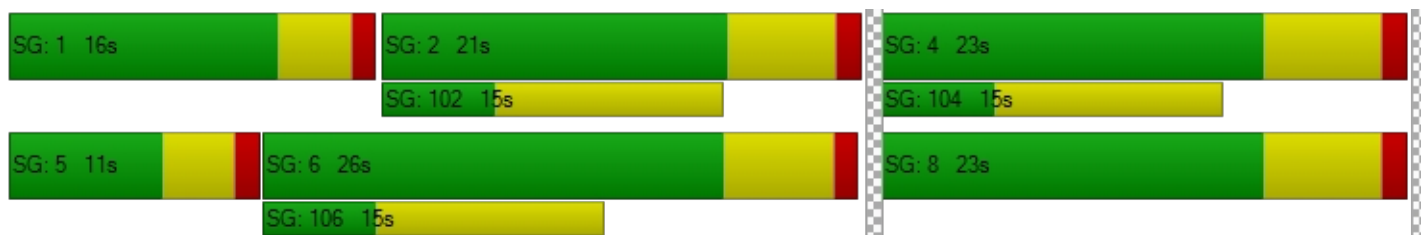
X, volume / capacity	0.02	0.91	0.74	0.61	0.39	0.39	0.10	0.65	0.00	1.01
d, Delay for Lane Group [s/veh]	27.78	29.69	28.73	21.39	9.71	10.35	13.24	19.56	12.68	45.24
Lane Group LOS	C	C	C	C	A	B	B	B	B	F
Critical Lane Group	No	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.01	6.30	4.82	2.51	2.08	2.34	0.51	3.20	0.01	15.59
50th-Percentile Queue Length [ft]	0.36	157.45	120.50	62.76	52.11	58.52	12.76	80.11	0.20	389.82
95th-Percentile Queue Length [veh]	0.03	10.41	8.42	4.52	3.75	4.21	0.92	5.77	0.01	22.17
95th-Percentile Queue Length [ft]	0.65	260.35	210.51	112.98	93.80	105.33	22.97	144.19	0.37	554.15

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.78	29.69	28.73	21.39	9.93	10.35	13.24	13.24	13.24	19.56	12.68	45.24
Movement LOS	C	C	C	C	A	B	B	B	B	B	B	F
d_A, Approach Delay [s/veh]	29.50			13.50			13.24			34.98		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	25.93											
Intersection LOS	C											
Intersection V/C	0.509											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type:	All-way stop	Delay (sec / veh):	202.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.721

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			T T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave			Merill Ave			Merill Ave		
Base Volume Input [veh/h]	0	0	0	145	0	75	106	350	0	0	100	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	12	0	39	9	23	30	376	0	0	1121	90
Total Hourly Volume [veh/h]	0	12	0	184	9	98	136	726	0	0	1221	186
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	0	48	2	26	36	191	0	0	321	49
Total Analysis Volume [veh/h]	0	13	0	194	9	103	143	764	0	0	1285	196
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	368	422	453	483	483	741	741
Degree of Utilization, x	0.04	0.73	0.32	0.79	0.79	1.72	1.68

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.11	5.70	1.34	7.22	7.22	44.95	43.84
95th-Percentile Queue Length [ft]	2.74	142.47	33.49	180.53	180.53	1123.65	1095.96
Approach Delay [s/veh]	13.16	31.07	29.95			345.31	
Approach LOS	B	D	D			F	
Intersection Delay [s/veh]	202.53						
Intersection LOS	F						

**Intersection Level Of Service Report  
Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Two-way stop	Delay (sec / veh):	1,166.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.054

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	25	1	15	6	1	0	2	552	8	1	165	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	94	0	232	0	0	0	0	373	44	113	249	4
Total Hourly Volume [veh/h]	119	1	247	6	1	0	2	925	52	114	414	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	0	65	2	0	0	1	243	14	30	109	2
Total Analysis Volume [veh/h]	125	1	260	6	1	0	2	974	55	120	436	8
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	2.08	0.01	0.88	1.05	0.01	0.00	0.00	0.01	0.00	0.18	0.00	0.00
d_M, Delay for Movement [s/veh]	995.95	986.64	948.19	1166.85	586.97	540.40	8.23	0.00	0.00	11.48	0.00	0.00
Movement LOS	F	F	F	F	F	F	A	A	A	B	A	A
95th-Percentile Queue Length [veh]	36.07	36.07	36.07	1.65	1.65	1.65	15.05	15.05	15.05	9.17	9.17	9.17
95th-Percentile Queue Length [ft]	901.77	901.77	901.77	41.21	41.21	41.21	376.25	376.25	376.25	229.37	229.37	229.37
d_A, Approach Delay [s/veh]	963.75			1084.01			0.02			2.44		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	191.65											
Intersection LOS	F											

**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	46.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.885

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	1	0	0
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	70.00	100.00	70.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	75	549	27	48	945	84	207	28	344	36	4	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	115	1480	0	90	1198	207	470	114	264	0	78	108
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	2029	27	138	2143	291	677	142	608	36	82	130
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	534	7	36	564	77	178	37	160	9	22	34
Total Analysis Volume [veh/h]	200	2136	28	145	2256	306	713	149	640	38	86	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	59	0	10	57	30	30	18	0	33	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	60	60	8	58	88	28	38	6	16	16
g / C, Green / Cycle	0.08	0.50	0.50	0.07	0.48	0.73	0.23	0.32	0.05	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.06	0.47	0.02	0.05	0.49	0.21	0.23	0.05	0.02	0.05	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1597	1676	1425
c, Capacity [veh/h]	258	2282	712	207	2206	1019	723	1012	80	224	190
d1, Uniform Delay [s]	53.89	28.20	15.31	54.83	31.01	6.21	45.80	29.36	55.48	47.48	49.84
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.35	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.92	8.81	0.10	4.28	25.09	0.53	12.52	0.07	4.37	1.08	5.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.77	0.94	0.04	0.70	1.02	0.30	0.99	0.15	0.48	0.38	0.72
d, Delay for Lane Group [s/veh]	58.81	37.02	15.42	59.11	56.10	6.74	58.32	29.43	59.85	48.56	54.89
Lane Group LOS	E	D	B	E	F	A	E	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.09	19.70	0.40	2.24	24.89	2.55	11.54	1.53	1.20	2.38	4.14
50th-Percentile Queue Length [ft]	77.15	492.46	10.03	55.88	622.22	63.80	288.60	38.14	30.02	59.57	103.48
95th-Percentile Queue Length [veh]	5.55	26.98	0.72	4.02	33.65	4.59	17.12	2.75	2.16	4.29	7.45
95th-Percentile Queue Length [ft]	138.87	674.43	18.06	100.59	841.31	114.84	427.90	68.66	54.03	107.23	186.26

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	58.81	37.02	15.42	59.11	56.10	6.74	58.32	29.43	0.00	59.85	48.56	54.89
Movement LOS	E	D	B	E	F	A	E	C		E	D	D
d_A, Approach Delay [s/veh]	38.60			50.68			53.32			53.53		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	46.56											
Intersection LOS	D											
Intersection V/C	0.885											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	28.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	350.00	250.00	100.00	100.00	200.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	399	272	562	757	246	258
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	1041	326	523	882	212	440
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1440	598	1085	1639	458	698
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	379	157	286	431	121	184
Total Analysis Volume [veh/h]	1516	629	1142	1725	482	735
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	2	7	1	6	7	4
Auxiliary Signal Groups		2,7				1,4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	5.2	3.2	3.6	5.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	51	20	39	90	20	20
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	49	69	37	88	18	57
g / C, Green / Cycle	0.45	0.63	0.34	0.80	0.16	0.52
(v / s)_i Volume / Saturation Flow Rate	0.43	0.40	0.33	0.49	0.14	0.26
s, saturation flow rate [veh/h]	3547	1583	3445	3547	3445	2803
c, Capacity [veh/h]	1580	962	1159	2837	564	1386
d1, Uniform Delay [s]	29.54	14.07	36.23	4.28	44.73	19.05
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.88	3.46	9.40	0.98	3.84	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

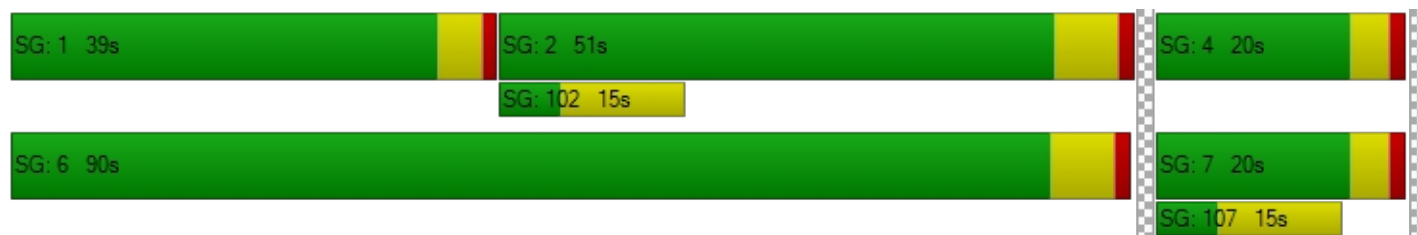
X, volume / capacity	0.96	0.65	0.99	0.61	0.85	0.53
d, Delay for Lane Group [s/veh]	44.42	17.54	45.63	5.26	48.57	19.36
Lane Group LOS	D	B	D	A	D	B
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	20.68	9.49	15.59	4.28	6.53	6.09
50th-Percentile Queue Length [ft]	516.89	237.25	389.82	106.96	163.16	152.30
95th-Percentile Queue Length [veh]	28.13	14.54	22.07	7.67	10.72	10.14
95th-Percentile Queue Length [ft]	703.32	363.56	551.72	191.77	267.90	253.49

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.42	17.54	45.63	5.26	48.57	19.36
Movement LOS	D	B	D	A	D	B
d_A, Approach Delay [s/veh]	36.53		21.34		30.93	
Approach LOS	D		C		C	
d_I, Intersection Delay [s/veh]	28.45					
Intersection LOS	C					
Intersection V/C	0.937					

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	78.0
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.074

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	200.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	180	464	272	201	472	169	269	643	68	466	568	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	91	309	3	155	338	190	293	2016	177	9	1227	141
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	271	773	275	356	810	359	562	2659	245	475	1795	277
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	203	72	94	213	94	148	700	64	125	472	73
Total Analysis Volume [veh/h]	285	814	289	375	853	378	592	2799	258	500	1889	292
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	12	22	19	15	25	27	27	64	12	19	56	15
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	10	20	39	13	23	50	25	62	74	17	54	69
g / C, Green / Cycle	0.08	0.17	0.33	0.11	0.19	0.42	0.21	0.52	0.62	0.14	0.45	0.58
(v / s)_i Volume / Saturation Flow Rate	0.09	0.18	0.20	0.12	0.19	0.27	0.19	0.61	0.18	0.16	0.41	0.20
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	258	761	437	336	875	568	646	2359	853	439	2055	793
d1, Uniform Delay [s]	55.00	50.00	36.18	53.50	48.21	29.56	46.48	29.00	11.82	51.50	30.95	14.83
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.11	0.11	0.32
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	59.00	52.82	7.66	61.79	24.84	6.03	5.73	84.87	0.45	68.81	2.04	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

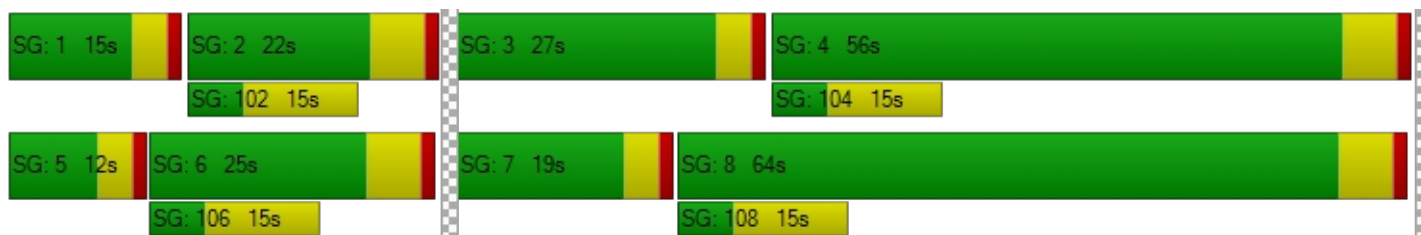
X, volume / capacity	1.10	1.07	0.66	1.12	0.97	0.67	0.92	1.19	0.30	1.14	0.92	0.37
d, Delay for Lane Group [s/veh]	114.00	102.82	43.84	115.29	73.05	35.59	52.21	113.87	12.27	120.31	32.99	15.67
Lane Group LOS	F	F	D	F	E	D	D	F	B	F	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	5.95	11.16	8.10	7.85	10.27	9.55	8.95	39.33	3.27	10.67	16.49	4.39
50th-Percentile Queue Length [ft]	148.84	279.07	202.45	196.31	256.68	238.78	223.68	983.14	81.85	266.63	412.28	109.66
95th-Percentile Queue Length [veh]	10.28	17.18	12.76	12.98	15.52	14.62	13.85	56.26	5.89	16.93	23.15	7.82
95th-Percentile Queue Length [ft]	257.12	429.60	319.12	324.43	388.06	365.49	346.32	1406.40	147.33	423.36	578.78	195.53

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	114.00	102.82	43.84	115.29	73.05	35.59	52.21	113.87	12.27	120.31	32.99	15.67
Movement LOS	F	F	D	F	E	D	D	F	B	F	C	B
d_A, Approach Delay [s/veh]	92.83			74.10			96.68			47.39		
Approach LOS	F			E			F			D		
d_I, Intersection Delay [s/veh]	78.05											
Intersection LOS	E											
Intersection V/C	1.074											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	125.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.512

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	170	0	586	0	1006	373	395	917	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	368	0	1344	1016	0	988	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	170	0	954	0	2350	1389	395	1905	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	45	0	251	0	618	366	104	501	0
Total Analysis Volume [veh/h]	0	0	0	179	0	1004	0	2474	1462	416	2005	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	25	0	0	64	0	11	75	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		23	23	23	62	62	9	73
g / C, Green / Cycle		0.23	0.23	0.23	0.62	0.62	0.09	0.73
(v / s)_i Volume / Saturation Flow Rate		0.11	0.35	0.35	0.54	1.03	0.13	0.44
s, saturation flow rate [veh/h]		1597	1425	1425	4567	1425	3101	4567
c, Capacity [veh/h]		367	328	328	2831	884	279	3334
d1, Uniform Delay [s]		33.39	38.50	38.50	15.76	19.00	45.50	6.50
k, delay calibration		0.11	0.50	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		1.00	254.14	254.14	4.10	299.71	224.98	0.81
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

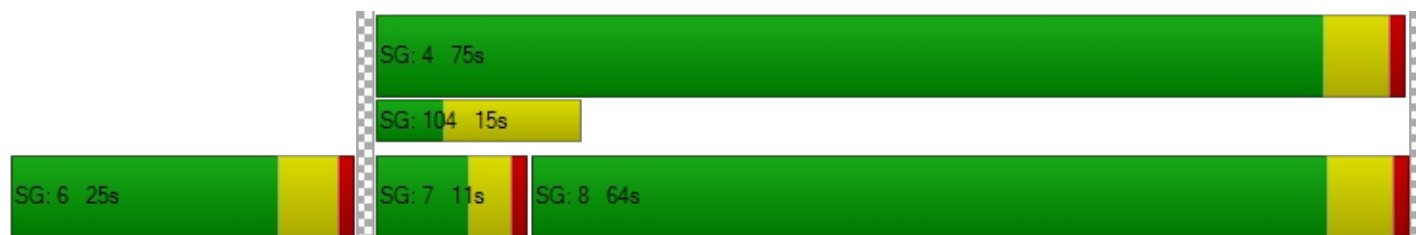
X, volume / capacity		0.49	1.53	1.53	0.87	1.65	1.49	0.60
d, Delay for Lane Group [s/veh]		34.39	292.64	292.64	19.86	318.71	270.48	7.31
Lane Group LOS		C	F	F	B	F	F	A
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		3.74	30.82	30.82	14.07	90.34	12.08	5.21
50th-Percentile Queue Length [ft]		93.54	770.52	770.52	351.63	2258.41	302.10	130.24
95th-Percentile Queue Length [veh]		6.73	48.32	48.32	20.22	143.98	20.09	8.95
95th-Percentile Queue Length [ft]		168.36	1207.98	1207.98	505.40	3599.50	502.27	223.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	34.39	292.64	292.64	0.00	19.86	318.71	270.48	7.31	0.00
Movement LOS				C	F	F		B	F	F	A	
d_A, Approach Delay [s/veh]	0.00			253.56			130.87			52.53		
Approach LOS	A			F			F			D		
d_I, Intersection Delay [s/veh]	124.96											
Intersection LOS	F											
Intersection V/C	1.512											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	92.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.118

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↑↵						↵↑↑			↑↑↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	356	0	612	0	0	0	390	816	0	0	958	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	474	0	0	0	0	0	858	400	0	0	513	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	830	0	612	0	0	0	1248	1216	0	0	1471	229
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	218	0	161	0	0	0	328	320	0	0	387	60
Total Analysis Volume [veh/h]	874	0	644	0	0	0	1314	1280	0	0	1548	241
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	0	0	34	61	0	0	27	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	27	27	27		32	59	25	25
g / C, Green / Cycle	0.30	0.30	0.30		0.36	0.66	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.32	0.33	0.36		0.42	0.28	0.34	0.17
s, saturation flow rate [veh/h]	1597	1546	1425		3101	4567	4567	1425
c, Capacity [veh/h]	479	464	428		1102	2994	1269	396
d1, Uniform Delay [s]	31.50	31.50	31.50		29.00	7.42	32.50	28.25
k, delay calibration	0.50	0.50	0.50		0.18	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	56.82	68.72	104.16		89.91	0.10	100.81	1.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

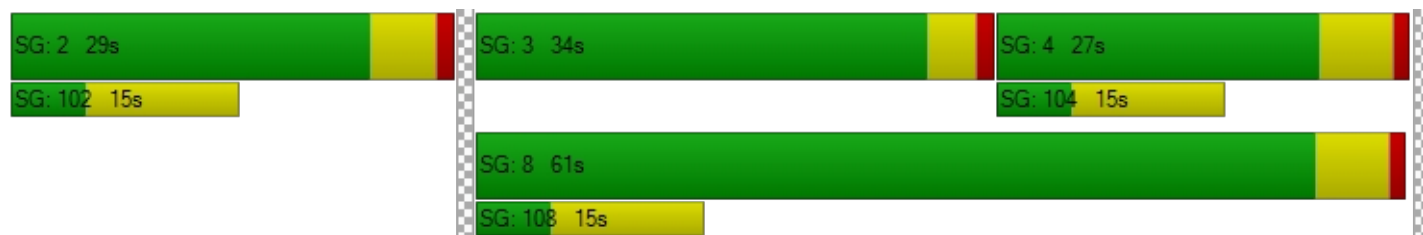
X, volume / capacity	1.06	1.09	1.18		1.19	0.43	1.22	0.61
d, Delay for Lane Group [s/veh]	88.32	100.22	135.66		118.91	7.52	133.31	29.77
Lane Group LOS	F	F	F		F	A	F	C
Critical Lane Group	No	No	Yes		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	17.25	18.24	21.02		24.69	3.15	20.46	4.44
50th-Percentile Queue Length [ft]	431.26	455.88	525.46		617.34	78.83	511.44	110.89
95th-Percentile Queue Length [veh]	24.90	26.62	31.47		36.62	5.68	31.10	7.89
95th-Percentile Queue Length [ft]	622.43	665.44	786.77		915.58	141.89	777.58	197.24

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	93.33	100.22	128.07	0.00	0.00	0.00	118.91	7.52	0.00	0.00	133.31	29.77
Movement LOS	F	F	F				F	A			F	C
d_A, Approach Delay [s/veh]	108.07			0.00			63.94			119.36		
Approach LOS	F			A			E			F		
d_I, Intersection Delay [s/veh]	92.10											
Intersection LOS	F											
Intersection V/C	1.118											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	26.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	1	1	0	1
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	48	710	43	217	708	76	270	782	45	30	221	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	57	47	101	102	9	53	28	0	126	93	286
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	767	90	318	810	85	323	810	45	156	314	446
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	202	24	84	213	22	85	213	12	41	83	117
Total Analysis Volume [veh/h]	62	807	95	335	853	89	340	853	47	164	331	469
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	11	21	0	12	22	13	13	24	0	13	24	12
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	19	19	10	23	36	11	22	22	11	22	34
g / C, Green / Cycle	0.08	0.27	0.27	0.14	0.33	0.52	0.16	0.32	0.32	0.15	0.31	0.49
(v / s)_i Volume / Saturation Flow Rate	0.04	0.20	0.08	0.12	0.21	0.07	0.12	0.30	0.04	0.12	0.12	0.37
s, saturation flow rate [veh/h]	1416	4050	1264	2750	4050	1264	2750	2831	1264	1416	2831	1264
c, Capacity [veh/h]	117	1102	344	393	1344	615	432	903	403	215	888	573
d1, Uniform Delay [s]	30.78	23.17	20.06	29.28	19.79	9.94	28.37	23.22	16.85	28.48	18.67	16.61
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.35
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.64	4.32	1.99	5.30	2.29	0.11	3.21	5.89	0.13	5.54	0.26	8.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.53	0.73	0.28	0.85	0.63	0.14	0.79	0.94	0.12	0.76	0.37	0.82
d, Delay for Lane Group [s/veh]	34.42	27.48	22.04	34.59	22.08	10.05	31.58	29.12	16.98	34.02	18.93	25.56
Lane Group LOS	C	C	C	C	C	B	C	C	B	C	B	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.06	4.08	1.30	2.92	3.92	0.70	2.72	6.78	0.50	2.77	1.91	6.85
50th-Percentile Queue Length [ft]	26.49	101.91	32.54	72.96	98.05	17.44	68.11	169.51	12.43	69.28	47.66	171.37
95th-Percentile Queue Length [veh]	1.91	7.34	2.34	5.25	7.06	1.26	4.90	11.05	0.90	4.99	3.43	11.15
95th-Percentile Queue Length [ft]	47.68	183.43	58.57	131.32	176.49	31.40	122.60	276.27	22.38	124.70	85.79	278.72

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.42	27.48	22.04	34.59	22.08	10.05	31.58	29.12	16.98	34.02	18.93	25.56
Movement LOS	C	C	C	C	C	B	C	C	B	C	B	C
d_A, Approach Delay [s/veh]	27.39			24.52			29.33			24.72		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.53											
Intersection LOS	C											
Intersection V/C	0.769											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type:	Signalized	Delay (sec / veh):	25.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↔↔↔↔↔			↔↔↔			↔↔↔			↔↔↔		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	2	1	0	0	1	0	1	2	0	0
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	10	574	914	66	624	6	7	387	46	472	91	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	114	72	11	150	0	0	16	0	173	16	11
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	688	986	77	774	6	7	403	46	645	107	37
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	181	259	20	204	2	2	106	12	170	28	10
Total Analysis Volume [veh/h]	11	724	1038	81	815	6	7	424	48	679	113	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	18	10	21	0	10	21	0	18	29	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	21	39	6	24	24	3	19	16	32
g / C, Green / Cycle	0.05	0.30	0.55	0.09	0.34	0.34	0.04	0.27	0.23	0.46
(v / s)_i Volume / Saturation Flow Rate	0.01	0.16	0.42	0.05	0.17	0.17	0.00	0.26	0.22	0.10
s, saturation flow rate [veh/h]	1573	4501	2486	1573	3146	1646	1573	1652	3056	1581
c, Capacity [veh/h]	74	1336	1299	140	1064	557	67	448	698	723
d1, Uniform Delay [s]	31.99	20.62	13.70	30.63	18.49	18.49	32.21	24.99	26.78	11.41
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.16	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.90	1.58	5.21	3.75	1.72	3.27	0.67	13.88	10.55	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

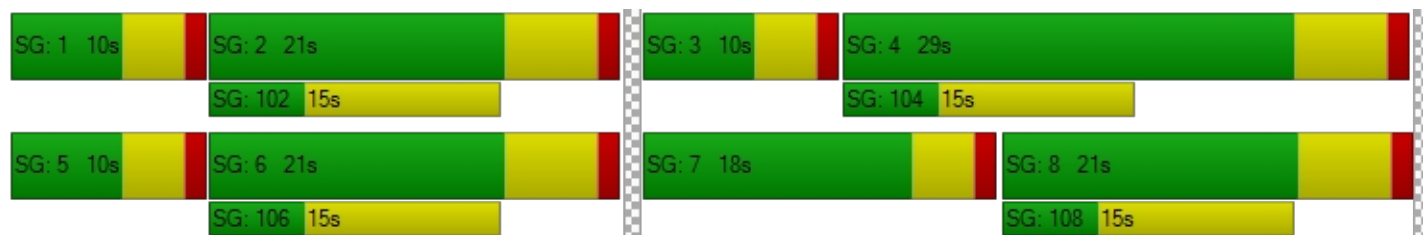
X, volume / capacity	0.15	0.54	0.80	0.58	0.51	0.51	0.10	0.95	0.97	0.21
d, Delay for Lane Group [s/veh]	32.89	22.21	18.91	34.38	20.21	21.76	32.88	38.88	37.33	11.55
Lane Group LOS	C	C	B	C	C	C	C	D	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.19	3.17	6.23	1.37	3.35	3.74	0.12	7.91	6.11	1.24
50th-Percentile Queue Length [ft]	4.68	79.15	155.81	34.36	83.63	93.56	3.00	197.65	152.85	30.97
95th-Percentile Queue Length [veh]	0.34	5.70	10.33	2.47	6.02	6.74	0.22	12.52	10.17	2.23
95th-Percentile Queue Length [ft]	8.42	142.46	258.16	61.84	150.53	168.41	5.40	312.93	254.23	55.74

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.89	22.21	18.91	34.38	20.73	21.76	32.88	38.88	0.00	37.33	11.55	11.55
Movement LOS	C	C	B	C	C	C	C	D		D	B	B
d_A, Approach Delay [s/veh]	20.34			21.97			38.78			32.62		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	25.32											
Intersection LOS	C											
Intersection V/C	0.856											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	28.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.678

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	204	456	123	160	576	280	389	948	177	93	318	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	1097	0	38	978	134	124	0	0	0	0	42
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	204	1553	123	198	1554	414	513	948	177	93	318	76
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	409	32	52	409	109	135	249	47	24	84	20
Total Analysis Volume [veh/h]	215	1635	129	208	1636	436	540	998	186	98	335	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.6	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	22	0	18	23	18	18	30	0	10	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	9	32	32	9	32	50	16	24	24	7	15	15
g / C, Green / Cycle	0.11	0.40	0.40	0.11	0.40	0.63	0.20	0.30	0.30	0.09	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.07	0.36	0.09	0.07	0.36	0.31	0.17	0.22	0.13	0.03	0.07	0.06
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	356	1843	575	350	1834	847	620	1350	421	273	839	262
d1, Uniform Delay [s]	33.69	22.17	15.65	33.75	22.32	9.49	31.00	25.40	22.83	34.35	28.76	28.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.32	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.66	6.79	0.90	1.62	7.07	1.42	3.96	0.81	0.73	0.79	0.31	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

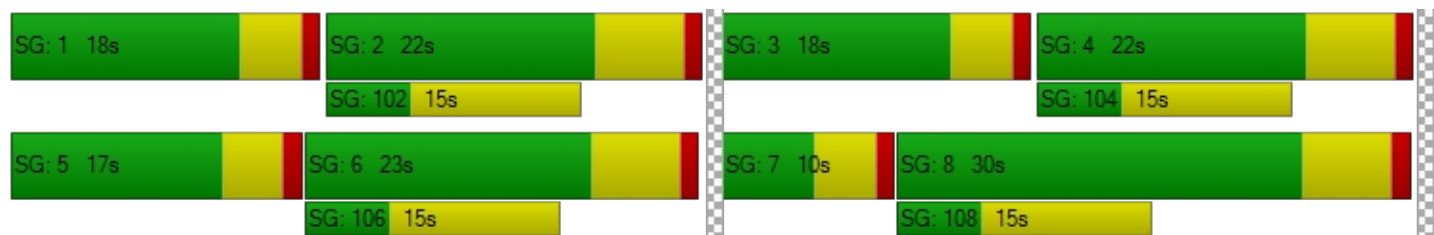
X, volume / capacity	0.60	0.89	0.22	0.59	0.89	0.51	0.87	0.74	0.44	0.36	0.40	0.31
d, Delay for Lane Group [s/veh]	35.35	28.96	16.55	35.36	29.39	10.91	34.96	26.21	23.56	35.14	29.07	28.89
Lane Group LOS	D	C	B	D	C	B	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.97	9.57	1.55	1.91	9.65	3.89	5.06	5.34	2.72	0.89	1.81	1.30
50th-Percentile Queue Length [ft]	49.25	239.16	38.73	47.63	241.33	97.36	126.55	133.62	68.00	22.17	45.20	32.56
95th-Percentile Queue Length [veh]	3.55	14.64	2.79	3.43	14.75	7.01	8.75	9.14	4.90	1.60	3.25	2.34
95th-Percentile Queue Length [ft]	88.65	365.97	69.71	85.74	368.72	175.25	218.79	228.41	122.41	39.90	81.37	58.61

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	35.35	28.96	16.55	35.36	29.39	10.91	34.96	26.21	23.56	35.14	29.07	28.89
Movement LOS	D	C	B	D	C	B	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	28.85			26.40			28.66			30.20		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.05											
Intersection LOS	C											
Intersection V/C	0.678											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 46: Hellman Ave/Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	↵↵		↵		↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	409	0	0	427
Total Hourly Volume [veh/h]	0	0	409	0	0	427
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	108	0	0	112
Total Analysis Volume [veh/h]	0	0	431	0	0	449
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	16.94	11.02	0.00	0.00	8.39	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.98		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	C					



**Intersection Level Of Service Report**  
**Intersection 47: Hellman Ave/Merrill Ave**

Control Type:	Unknown	Delay (sec / veh):	?
Analysis Method:	?	Level Of Service:	?
Analysis Period:	15 minutes	Volume to Capacity (v/c):	?

**Intersection Setup**

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵		↵↑		↑↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	573	170	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	605	366	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1178	536	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	310	141	0
Total Analysis Volume [veh/h]	0	0	0	1240	564	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Level Of Service Report**  
**Intersection 66: Archibald Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	139.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.226

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	0	868	30	47	1093	0	0	0	0	2	0	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	347	1559	40	107	1287	20	29	52	328	26	60	104
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	347	2427	70	154	2380	20	29	52	328	28	60	126
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	639	18	41	626	5	8	14	86	7	16	33
Total Analysis Volume [veh/h]	365	2555	74	162	2505	21	31	55	345	29	63	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	20	69	0	10	59	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	18	67	67	8	57	57	19	19	19	19
g / C, Green / Cycle	0.18	0.67	0.67	0.08	0.57	0.57	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.23	0.78	0.79	0.10	0.75	0.76	0.03	0.03	0.24	0.15
s, saturation flow rate [veh/h]	1597	1676	1660	1597	1676	1672	1064	1676	1425	1480
c, Capacity [veh/h]	287	1123	1112	128	956	953	121	319	271	322
d1, Uniform Delay [s]	41.00	16.50	16.50	46.00	21.50	21.50	46.90	33.92	40.50	38.57
k, delay calibration	0.28	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.31	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	136.04	86.39	91.29	133.73	152.13	153.84	1.11	0.25	140.22	2.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.27	1.17	1.18	1.27	1.32	1.33	0.26	0.17	1.27	0.70
d, Delay for Lane Group [s/veh]	177.04	102.89	107.79	179.73	173.63	175.34	48.02	34.17	180.72	41.32
Lane Group LOS	F	F	F	F	F	F	D	C	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	17.51	45.25	46.31	7.77	58.50	58.78	0.78	1.11	16.95	5.32
50th-Percentile Queue Length [ft]	437.86	1131.18	1157.84	194.15	1462.42	1469.43	19.43	27.81	423.77	133.03
95th-Percentile Queue Length [veh]	27.18	64.01	65.84	13.28	86.62	87.14	1.40	2.00	26.50	9.10
95th-Percentile Queue Length [ft]	679.55	1600.25	1645.91	332.08	2165.45	2178.43	34.97	50.05	662.45	227.61

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	177.04	105.27	107.79	179.73	174.47	175.34	48.02	34.17	180.72	41.32	41.32	41.32
Movement LOS	F	F	F	F	F	F	D	C	F	D	D	D
d_A, Approach Delay [s/veh]	114.08			174.80			152.47			41.32		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	139.86											
Intersection LOS	F											
Intersection V/C	1.226											

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**EXISTING PLUS PROJECT AM/PM PEAK HOUR**

**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	138	883	163	56	862	98	109	313	128	179	437	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	22	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	3	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	891	163	56	887	98	109	313	128	179	437	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	223	41	14	222	25	27	78	32	45	109	23
Total Analysis Volume [veh/h]	138	891	163	56	887	98	109	313	128	179	437	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	25	0	10	21	0	9	22	0	13	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	9	26	26	6	22	22	33	23	23	33	25
g / C, Green / Cycle	0.12	0.36	0.36	0.08	0.32	0.32	0.47	0.33	0.33	0.47	0.35
(v / s)_i Volume / Saturation Flow Rate	0.09	0.28	0.11	0.04	0.20	0.20	0.11	0.14	0.14	0.17	0.31
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1659	967	1676	1515	1057	1692
c, Capacity [veh/h]	198	1163	519	128	1022	531	347	546	493	525	592
d1, Uniform Delay [s]	29.40	19.62	15.97	30.71	20.29	20.31	16.17	18.46	18.51	13.77	21.53
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.25
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.39	4.85	1.58	2.36	2.99	5.72	0.51	0.52	0.59	0.38	10.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

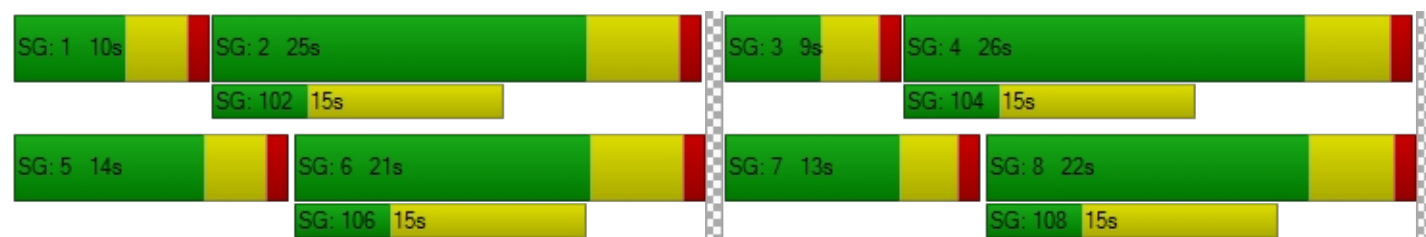
X, volume / capacity	0.70	0.77	0.31	0.44	0.63	0.64	0.31	0.42	0.43	0.34	0.89
d, Delay for Lane Group [s/veh]	33.79	24.47	17.55	33.07	23.27	26.02	16.69	18.97	19.10	14.15	32.12
Lane Group LOS	C	C	B	C	C	C	B	B	B	B	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.31	6.36	1.89	0.93	4.43	5.03	0.97	2.67	2.48	1.65	8.89
50th-Percentile Queue Length [ft]	57.79	159.00	47.21	23.22	110.87	125.82	24.34	66.86	61.92	41.21	222.30
95th-Percentile Queue Length [veh]	4.16	10.50	3.40	1.67	7.89	8.71	1.75	4.81	4.46	2.97	13.78
95th-Percentile Queue Length [ft]	104.02	262.40	84.98	41.80	197.22	217.80	43.81	120.34	111.45	74.18	344.56

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.79	24.47	17.55	33.07	24.02	26.02	16.69	19.01	19.10	14.15	32.12	32.12
Movement LOS	C	C	B	C	C	C	B	B	B	B	C	C
d_A, Approach Delay [s/veh]	24.61			24.69			18.57			27.57		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	24.28											
Intersection LOS	C											
Intersection V/C	0.674											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.466

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	188	915	188	77	671	80	136	209	247	76	144	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	54	0	0	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	925	188	77	725	80	136	209	248	76	144	80
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	231	47	19	181	20	34	52	62	19	36	20
Total Analysis Volume [veh/h]	188	925	188	77	725	80	136	209	248	76	144	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	30	0	10	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	7	34	34	6	33	33	24	16	16	24	15	15
g / C, Green / Cycle	0.11	0.49	0.49	0.09	0.47	0.47	0.34	0.23	0.23	0.34	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.24	0.02	0.17	0.17	0.11	0.12	0.17	0.07	0.07	0.07
s, saturation flow rate [veh/h]	3101	3192	1536	3101	3192	1593	1224	1676	1482	1056	1676	1546
c, Capacity [veh/h]	333	1549	745	271	1485	741	484	384	339	358	357	329
d1, Uniform Delay [s]	29.68	12.12	12.12	29.90	12.03	12.05	19.26	23.77	24.98	19.27	23.25	23.35
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.50	1.09	2.26	0.57	0.68	1.38	0.31	1.20	3.03	0.29	0.51	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.56	0.48	0.49	0.28	0.36	0.36	0.28	0.54	0.73	0.21	0.32	0.34
d, Delay for Lane Group [s/veh]	31.17	13.21	14.38	30.47	12.71	13.43	19.57	24.97	28.02	19.56	23.75	23.94
Lane Group LOS	C	B	B	C	B	B	B	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.45	3.39	3.51	0.58	2.33	2.49	1.59	2.91	3.76	0.86	1.51	1.48
50th-Percentile Queue Length [ft]	36.26	84.85	87.78	14.54	58.35	62.35	39.76	72.77	93.93	21.50	37.65	37.00
95th-Percentile Queue Length [veh]	2.61	6.11	6.32	1.05	4.20	4.49	2.86	5.24	6.76	1.55	2.71	2.66
95th-Percentile Queue Length [ft]	65.27	152.74	158.01	26.17	105.02	112.23	71.56	130.99	169.07	38.70	67.77	66.60

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.17	13.43	14.38	30.47	12.90	13.43	19.57	24.97	28.02	19.56	23.79	23.94
Movement LOS	C	B	B	C	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	16.13			14.48			25.01			22.76		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.02											
Intersection LOS	B											
Intersection V/C	0.466											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.263

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Lane Configuration	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Turning Movement												
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	372	670	219	34	212	27	23	117	84	71	254	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	7	2	0	39	0	0	0	6	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	2	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	373	679	221	34	253	27	23	117	90	81	254	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	170	55	9	63	7	6	29	23	20	64	10
Total Analysis Volume [veh/h]	373	679	221	34	253	27	23	117	90	81	254	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.0	3.2	4.8	3.0	3.0	4.4	3.2	3.0	4.4	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	24	9	10	21	15	15	27	13	9	21	10
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	11	43	51	5	37	42	4	8	21	6	11	17
g / C, Green / Cycle	0.16	0.61	0.73	0.07	0.52	0.61	0.05	0.12	0.30	0.09	0.15	0.24
(v / s)_i Volume / Saturation Flow Rate	0.12	0.15	0.16	0.01	0.06	0.02	0.01	0.04	0.06	0.03	0.08	0.03
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	487	2805	997	205	2389	824	170	382	390	266	481	305
d1, Uniform Delay [s]	28.26	6.12	3.73	30.86	8.42	6.35	31.50	28.16	19.69	30.04	27.44	22.26
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.54	0.20	0.51	0.38	0.09	0.02	0.36	0.45	0.30	0.64	0.90	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

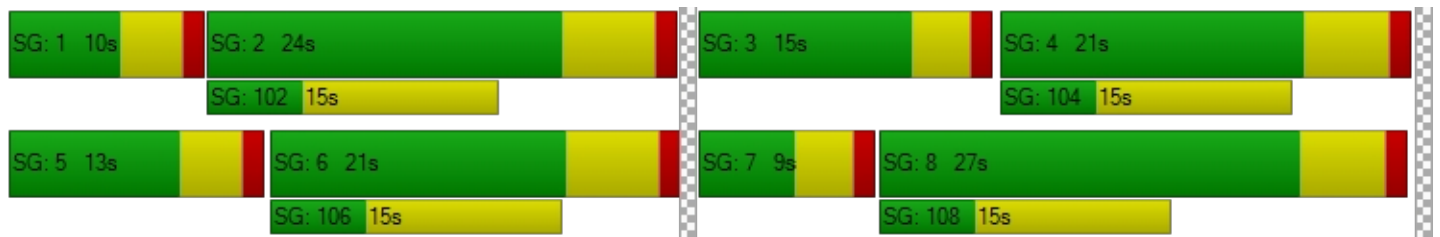
X, volume / capacity	0.77	0.24	0.22	0.17	0.11	0.03	0.14	0.31	0.23	0.30	0.53	0.13
d, Delay for Lane Group [s/veh]	30.81	6.33	4.24	31.24	8.51	6.37	31.86	28.61	19.99	30.68	28.34	22.45
Lane Group LOS	C	A	A	C	A	A	C	C	B	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.94	1.16	0.79	0.27	0.55	0.14	0.18	0.86	1.07	0.62	1.88	0.51
50th-Percentile Queue Length [ft]	73.48	28.91	19.82	6.64	13.71	3.43	4.57	21.53	26.72	15.61	47.00	12.71
95th-Percentile Queue Length [veh]	5.29	2.08	1.43	0.48	0.99	0.25	0.33	1.55	1.92	1.12	3.38	0.92
95th-Percentile Queue Length [ft]	132.26	52.03	35.67	11.95	24.67	6.18	8.22	38.75	48.10	28.09	84.60	22.88

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.81	6.33	4.24	31.24	8.51	6.37	31.86	28.61	19.99	30.68	28.34	22.45
Movement LOS	C	A	A	C	A	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	13.14			10.79			25.56			28.22		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	16.68											
Intersection LOS	B											
Intersection V/C	0.263											

**Sequence**


Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	17.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	279	831	0	0	803	454	0	0	0	450	0	398
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	4	0	0	22	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	17	4	0	0	3	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	303	839	0	0	828	454	0	0	0	450	0	398
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	210	0	0	207	114	0	0	0	113	0	100
Total Analysis Volume [veh/h]	303	839	0	0	828	454	0	0	0	450	0	398
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	22	43	0	0	21	0	0	0	0	0	17	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	14	41	25	25		15	15	15
g / C, Green / Cycle	0.24	0.68	0.41	0.41		0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.19	0.26	0.26	0.32		0.18	0.19	0.19
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1517	1425
c, Capacity [veh/h]	382	2181	1311	585		399	379	356
d1, Uniform Delay [s]	21.42	4.08	14.07	15.29		20.62	20.75	20.91
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	3.74	0.51	2.32	9.71		2.54	2.95	3.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	0.38	0.63	0.78		0.73	0.75	0.77
d, Delay for Lane Group [s/veh]	25.17	4.60	16.39	25.00		23.16	23.69	24.47
Lane Group LOS	C	A	B	C		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	3.90	1.26	4.04	5.88		3.53	3.50	3.47
50th-Percentile Queue Length [ft]	97.46	31.50	100.89	147.11		88.21	87.51	86.79
95th-Percentile Queue Length [veh]	7.02	2.27	7.26	9.86		6.35	6.30	6.25
95th-Percentile Queue Length [ft]	175.44	56.70	181.60	246.57		158.77	157.52	156.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	25.17	4.60	0.00	0.00	16.39	25.00	0.00	0.00	0.00	23.35	23.69	24.24
Movement LOS	C	A			B	C				C	C	C
d_A, Approach Delay [s/veh]	10.05			19.44			0.00			23.76		
Approach LOS	B			B			A			C		
d_I, Intersection Delay [s/veh]	17.28											
Intersection LOS	B											
Intersection V/C	0.701											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	r			r			r+					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	715	478	273	957	0	390	2	278	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	22	0	0	0	22	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	3	0	0	0	13	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	747	478	273	982	0	390	2	313	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	187	120	68	246	0	98	1	78	0	0	0
Total Analysis Volume [veh/h]	0	747	478	273	982	0	390	2	313	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	26	0	15	41	0	0	19	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	L	C	L	C	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	24	24	13	39	17	17	
g / C, Green / Cycle	0.40	0.40	0.21	0.65	0.28	0.28	
(v / s)_j Volume / Saturation Flow Rate	0.23	0.32	0.17	0.31	0.23	0.23	
s, saturation flow rate [veh/h]	3192	1482	1597	3192	1597	1437	
c, Capacity [veh/h]	1285	596	342	2075	452	407	
d1, Uniform Delay [s]	13.98	15.81	22.35	5.31	20.02	20.14	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.93	10.86	4.30	0.78	3.58	4.38	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

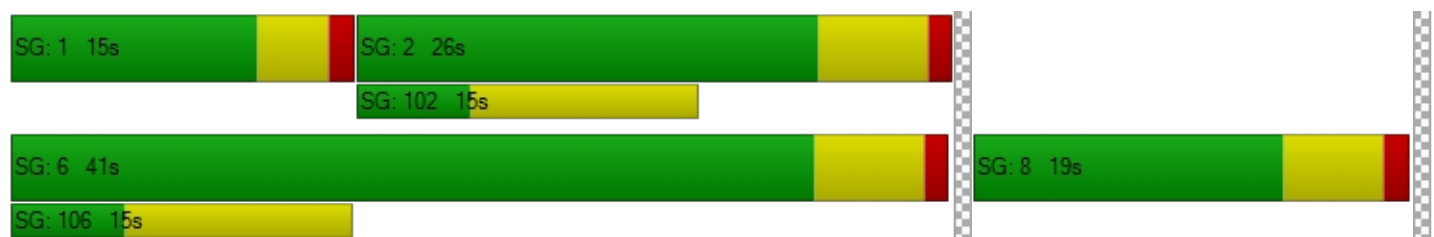
X, volume / capacity	0.58	0.80	0.80	0.47	0.81	0.83	
d, Delay for Lane Group [s/veh]	15.91	26.67	26.64	6.09	23.60	24.52	
Lane Group LOS	B	C	C	A	C	C	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	3.57	6.47	3.62	1.99	4.56	4.29	
50th-Percentile Queue Length [ft]	89.25	161.68	90.59	49.84	114.01	107.24	
95th-Percentile Queue Length [veh]	6.43	10.64	6.52	3.59	8.06	7.69	
95th-Percentile Queue Length [ft]	160.65	265.95	163.06	89.72	201.57	192.15	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	15.91	26.67	26.64	6.09	0.00	23.68	24.52	24.52	0.00	0.00	0.00
Movement LOS		B	C	C	A		C	C	C			
d_A, Approach Delay [s/veh]	20.11			10.56			24.04			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	17.21											
Intersection LOS	B											
Intersection V/C	0.728											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.754

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	199	981	0	0	604	445	0	0	0	182	1	430
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	10	0	0	55	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	991	0	0	659	445	0	0	0	182	1	430
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	248	0	0	165	111	0	0	0	46	0	108
Total Analysis Volume [veh/h]	223	991	0	0	659	445	0	0	0	182	1	430
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	12	38	0	0	26	0	0	0	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	10	36	24	24		20	20
g / C, Green / Cycle	0.17	0.60	0.40	0.40		0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.14	0.31	0.21	0.31		0.11	0.30
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	266	1915	1277	570		532	475
d1, Uniform Delay [s]	24.22	6.96	13.61	15.70		15.06	19.10
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	6.91	1.00	1.49	10.19		0.38	9.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

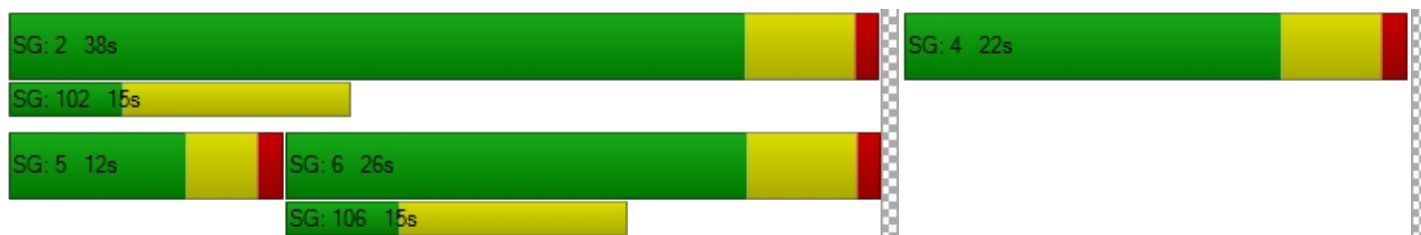
X, volume / capacity	0.84	0.52	0.52	0.78		0.34	0.91
d, Delay for Lane Group [s/veh]	31.12	7.96	15.10	25.89		15.44	28.56
Lane Group LOS	C	A	B	C		B	C
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	3.19	2.50	2.94	5.78		1.66	6.04
50th-Percentile Queue Length [ft]	79.66	62.39	73.42	144.43		41.58	150.88
95th-Percentile Queue Length [veh]	5.74	4.49	5.29	9.72		2.99	10.06
95th-Percentile Queue Length [ft]	143.39	112.30	132.16	242.98		74.84	251.60

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.12	7.96	0.00	0.00	15.10	25.89	0.00	0.00	0.00	15.44	15.44	28.56
Movement LOS	C	A			B	C				B	B	C
d_A, Approach Delay [s/veh]	12.22			19.45			0.00			24.64		
Approach LOS	B			B			A			C		
d_I, Intersection Delay [s/veh]	17.54											
Intersection LOS	B											
Intersection V/C	0.754											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.801

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	578	242	251	543	0	597	0	148	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	34	0	0	55	0	0	0	143	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	612	242	251	598	0	597	0	291	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	153	61	63	150	0	149	0	73	0	0	0
Total Analysis Volume [veh/h]	0	612	242	251	598	0	597	0	291	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	13	34	0	0	26	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	19	19	11	32	24	24	
g / C, Green / Cycle	0.32	0.32	0.18	0.53	0.40	0.40	
(v / s)_i Volume / Saturation Flow Rate	0.25	0.27	0.16	0.19	0.37	0.20	
s, saturation flow rate [veh/h]	1676	1585	1597	3192	1597	1425	
c, Capacity [veh/h]	531	502	293	1702	639	570	
d1, Uniform Delay [s]	18.80	19.17	23.74	8.04	17.25	13.57	
k, delay calibration	0.50	0.50	0.11	0.50	0.27	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	12.24	16.42	7.19	0.57	14.40	0.71	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

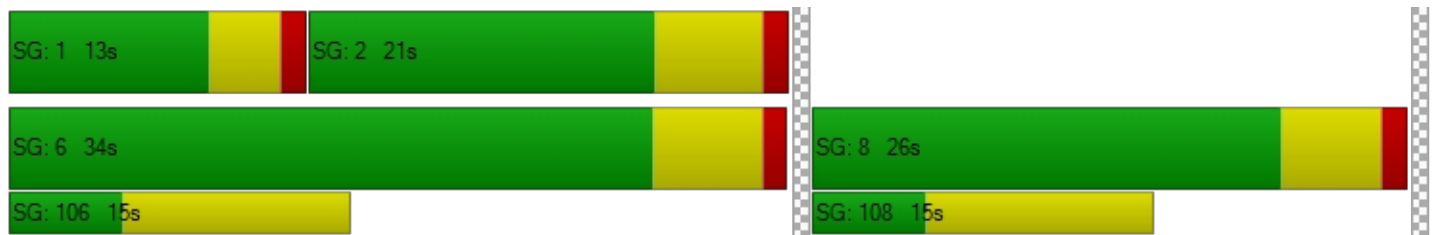
X, volume / capacity	0.80	0.85	0.86	0.35	0.93	0.51	
d, Delay for Lane Group [s/veh]	31.03	35.60	30.93	8.61	31.65	14.28	
Lane Group LOS	C	D	C	A	C	B	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	6.42	7.00	3.58	1.69	8.91	2.55	
50th-Percentile Queue Length [ft]	160.43	174.88	89.41	42.13	222.68	63.71	
95th-Percentile Queue Length [veh]	10.57	11.33	6.44	3.03	13.80	4.59	
95th-Percentile Queue Length [ft]	264.29	283.32	160.94	75.83	345.04	114.68	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	32.41	35.60	30.93	8.61	0.00	31.65	31.65	14.28	0.00	0.00	0.00
Movement LOS		C	D	C	A		C	C	B			
d_A, Approach Delay [s/veh]	33.31			15.21			25.96			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	24.86											
Intersection LOS	C											
Intersection V/C	0.801											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.665

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	476	1012	0	0	279	104	0	0	0	253	2	383
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	55	0	0	0	0	97	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	2	0	0	0	0	11	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	476	1024	0	0	336	104	0	0	0	361	2	383
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	119	256	0	0	84	26	0	0	0	90	1	96
Total Analysis Volume [veh/h]	476	1024	0	0	336	104	0	0	0	361	2	383
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	28	39	0	0	11	0	0	0	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	21	37	14	14		19	19
g / C, Green / Cycle	0.34	0.62	0.24	0.24		0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.30	0.22	0.09	0.10		0.23	0.27
s, saturation flow rate [veh/h]	1597	4567	3192	1490		1597	1425
c, Capacity [veh/h]	550	2816	762	356		506	451
d1, Uniform Delay [s]	18.36	5.68	19.14	19.28		18.13	19.16
k, delay calibration	0.15	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	5.91	0.36	1.47	3.50		1.93	4.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

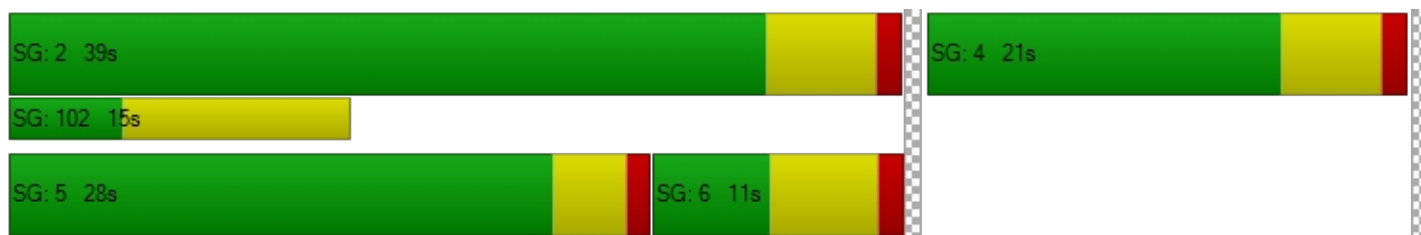
X, volume / capacity	0.87	0.36	0.38	0.41		0.72	0.85
d, Delay for Lane Group [s/veh]	24.27	6.05	20.61	22.78		20.06	23.81
Lane Group LOS	C	A	C	C		C	C
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	6.05	1.44	1.66	1.87		4.05	4.80
50th-Percentile Queue Length [ft]	151.34	35.94	41.60	46.64		101.32	120.02
95th-Percentile Queue Length [veh]	10.09	2.59	3.00	3.36		7.30	8.39
95th-Percentile Queue Length [ft]	252.21	64.69	74.89	83.95		182.38	209.85

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.27	6.05	0.00	0.00	20.89	22.78	0.00	0.00	0.00	20.06	20.06	23.81
Movement LOS	C	A			C	C				C	C	C
d_A, Approach Delay [s/veh]	11.83			21.34			0.00			21.98		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	16.21											
Intersection LOS	B											
Intersection V/C	0.665											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	1157	337	76	451	0	319	1	295	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	28	0	152	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	14	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	6	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1169	379	76	616	0	319	1	295	0	6	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	292	95	19	154	0	80	0	74	0	2	0
Total Analysis Volume [veh/h]	0	1169	379	76	616	0	319	1	295	0	6	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	28	0	15	43	0	0	17	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	33	33	6	41	15	15	
g / C, Green / Cycle	0.55	0.55	0.10	0.68	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.32	0.35	0.05	0.13	0.20	0.21	
s, saturation flow rate [veh/h]	3192	1484	1597	4567	1597	1425	
c, Capacity [veh/h]	1761	819	157	3121	399	356	
d1, Uniform Delay [s]	8.91	9.25	25.61	3.48	21.10	21.28	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.44	3.67	2.30	0.14	3.78	4.94	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.59	0.63	0.48	0.20	0.80	0.83	
d, Delay for Lane Group [s/veh]	10.35	12.91	27.90	3.62	24.88	26.22	
Lane Group LOS	B	B	C	A	C	C	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	3.49	4.09	1.03	0.50	4.09	3.90	
50th-Percentile Queue Length [ft]	87.32	102.33	25.86	12.54	102.13	97.44	
95th-Percentile Queue Length [veh]	6.29	7.37	1.86	0.90	7.35	7.02	
95th-Percentile Queue Length [ft]	157.18	184.19	46.54	22.57	183.84	175.39	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	10.65	12.91	27.90	3.62	0.00	24.88	24.88	26.22	0.00	0.00	0.00
Movement LOS		B	B	C	A		C	C	C			
d_A, Approach Delay [s/veh]	11.21			6.29			25.52			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	13.10											
Intersection LOS	B											
Intersection V/C	0.602											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.492

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TTT			TTTTT			TTT			TTT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	121	840	54	152	899	47	126	265	93	61	278	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	1	42	0	0	0	3	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	871	54	153	957	47	126	265	96	61	278	183
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	218	14	38	239	12	32	66	24	15	70	46
Total Analysis Volume [veh/h]	121	871	54	153	957	47	126	265	96	61	278	183
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	29	0	10	21	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	28	28	7	27	27	19	19	19	19	19	19
g / C, Green / Cycle	0.13	0.47	0.47	0.11	0.46	0.46	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.09	0.22	0.22	0.06	0.24	0.04	0.17	0.13	0.13	0.08	0.16	0.17
s, saturation flow rate [veh/h]	1416	2831	1443	2750	4050	1264	740	1487	1355	811	1487	1295
c, Capacity [veh/h]	180	1328	677	314	1849	577	240	471	429	282	471	410
d1, Uniform Delay [s]	25.01	10.78	10.79	24.93	11.61	9.21	25.33	16.02	16.07	20.78	16.75	16.84
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.33	1.15	2.26	1.17	1.04	0.28	1.77	0.54	0.62	0.38	0.88	1.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

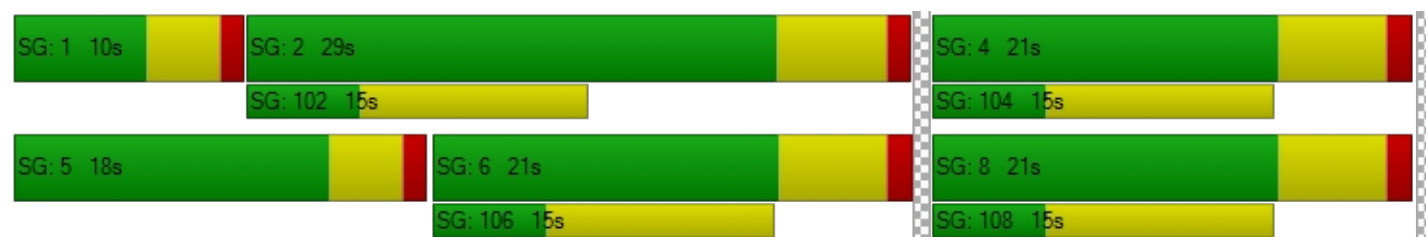
X, volume / capacity	0.67	0.46	0.46	0.49	0.52	0.08	0.52	0.40	0.41	0.22	0.52	0.53
d, Delay for Lane Group [s/veh]	29.34	11.94	13.05	26.10	12.65	9.48	27.10	16.56	16.69	21.16	17.63	17.91
Lane Group LOS	C	B	B	C	B	A	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	1.70	2.36	2.62	0.98	2.56	0.32	1.73	1.79	1.68	0.69	2.46	2.23
50th-Percentile Queue Length [ft]	42.59	59.05	65.58	24.43	63.92	8.06	43.26	44.79	42.06	17.23	61.39	55.75
95th-Percentile Queue Length [veh]	3.07	4.25	4.72	1.76	4.60	0.58	3.11	3.22	3.03	1.24	4.42	4.01
95th-Percentile Queue Length [ft]	76.66	106.30	118.04	43.97	115.05	14.50	77.86	80.62	75.71	31.02	110.50	100.36

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.34	12.27	13.05	26.10	12.65	9.48	27.10	16.60	16.69	21.16	17.66	17.91
Movement LOS	C	B	B	C	B	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	14.28			14.30			19.34			18.16		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	15.68											
Intersection LOS	B											
Intersection V/C	0.492											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.447

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	51	423	11	94	380	92	153	207	44	9	181	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	34	1	0	198	0	0	0	1	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	457	12	94	578	92	153	207	45	13	181	168
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	114	3	24	145	23	38	52	11	3	45	42
Total Analysis Volume [veh/h]	52	457	12	94	578	92	153	207	45	13	181	168
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	17	28	0	11	22	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	5	34	34	6	35	35	9	19	19	24	13	13
g / C, Green / Cycle	0.08	0.48	0.48	0.09	0.49	0.49	0.13	0.27	0.27	0.34	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.03	0.14	0.14	0.06	0.20	0.20	0.10	0.08	0.08	0.01	0.11	0.12
s, saturation flow rate [veh/h]	1597	1676	1728	1597	1676	1663	1597	1676	1575	1118	1676	1425
c, Capacity [veh/h]	124	802	826	150	829	822	205	445	418	446	311	264
d1, Uniform Delay [s]	30.79	11.05	11.06	30.55	11.19	11.20	29.40	20.45	20.49	18.02	26.04	26.33
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.26	0.90	0.88	4.29	1.47	1.49	5.30	0.35	0.39	0.03	1.73	2.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.42	0.29	0.29	0.63	0.41	0.41	0.75	0.29	0.30	0.03	0.58	0.64
d, Delay for Lane Group [s/veh]	33.05	11.96	11.94	34.84	12.66	12.69	34.69	20.81	20.88	18.04	27.77	28.87
Lane Group LOS	C	B	B	C	B	B	C	C	C	B	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.85	1.96	2.02	1.58	2.97	2.95	2.60	1.57	1.51	0.14	2.69	2.57
50th-Percentile Queue Length [ft]	21.26	48.91	50.38	39.60	74.19	73.85	65.12	39.20	37.75	3.52	67.19	64.21
95th-Percentile Queue Length [veh]	1.53	3.52	3.63	2.85	5.34	5.32	4.69	2.82	2.72	0.25	4.84	4.62
95th-Percentile Queue Length [ft]	38.28	88.04	90.68	71.28	133.54	132.94	117.21	70.56	67.94	6.34	120.95	115.58

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.05	11.95	11.94	34.84	12.67	12.69	34.69	20.83	20.88	18.04	27.77	28.87
Movement LOS	C	B	B	C	B	B	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	14.05			15.40			26.08			27.93		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.38											
Intersection LOS	B											
Intersection V/C	0.447											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	7.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.342

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	73	1127	11	49	434	11	19	2	13	22	8	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	38	0	0	152	0	0	0	9	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	16	0	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	1181	11	49	599	11	19	2	22	24	8	87
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	295	3	12	150	3	5	1	6	6	2	22
Total Analysis Volume [veh/h]	74	1181	11	49	599	11	19	2	22	24	8	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	10	21	0	0	29	0	0	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	42	42	5	42	42	7	7	7	7
g / C, Green / Cycle	0.10	0.71	0.71	0.08	0.69	0.69	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.25	0.03	0.13	0.13	0.02	0.02	0.02	0.07
s, saturation flow rate [veh/h]	1597	3192	1669	1597	3192	1661	1166	1501	1243	1443
c, Capacity [veh/h]	153	2251	1177	133	2211	1151	169	167	229	160
d1, Uniform Delay [s]	25.71	3.45	3.45	25.99	3.24	3.24	28.00	24.08	25.47	25.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.34	0.43	0.81	1.68	0.18	0.35	0.29	0.39	0.20	3.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

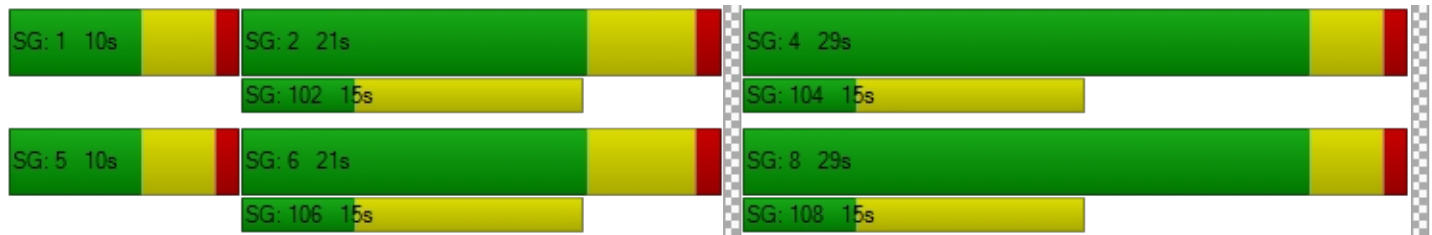
X, volume / capacity	0.48	0.35	0.35	0.37	0.18	0.18	0.11	0.14	0.10	0.59
d, Delay for Lane Group [s/veh]	28.05	3.88	4.27	27.68	3.42	3.59	28.29	24.48	25.67	28.82
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.01	0.94	1.11	0.67	0.46	0.53	0.26	0.30	0.30	1.32
50th-Percentile Queue Length [ft]	25.25	23.42	27.65	16.65	11.46	13.29	6.45	7.46	7.59	33.08
95th-Percentile Queue Length [veh]	1.82	1.69	1.99	1.20	0.82	0.96	0.46	0.54	0.55	2.38
95th-Percentile Queue Length [ft]	45.45	42.15	49.77	29.96	20.62	23.92	11.61	13.44	13.67	59.54

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.05	4.01	4.27	27.68	3.47	3.59	28.29	24.48	24.48	25.67	28.82	28.82
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	5.42			5.28			26.16			28.18		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.10											
Intersection LOS	A											
Intersection V/C	0.342											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.530

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	52	667	145	140	766	114	110	287	41	139	462	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	2	44	0	0	0	3	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	698	145	142	826	114	110	287	44	139	462	90
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	175	36	36	207	29	28	72	11	35	116	23
Total Analysis Volume [veh/h]	52	698	145	142	826	114	110	287	44	139	462	90
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	23	0	12	25	14	14	23	0	12	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	29	29	8	32	41	7	17	8	18	18
g / C, Green / Cycle	0.08	0.42	0.42	0.12	0.46	0.58	0.10	0.24	0.12	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.03	0.20	0.09	0.08	0.23	0.07	0.06	0.17	0.08	0.15	0.15
s, saturation flow rate [veh/h]	1774	3547	1583	1774	3547	1583	1774	1893	1774	1863	1831
c, Capacity [veh/h]	138	1471	657	209	1612	875	179	449	206	470	462
d1, Uniform Delay [s]	30.65	14.92	13.19	29.61	13.57	7.55	30.16	24.69	29.68	23.01	23.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.68	1.10	0.77	3.84	1.17	0.07	3.38	2.39	3.83	1.19	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

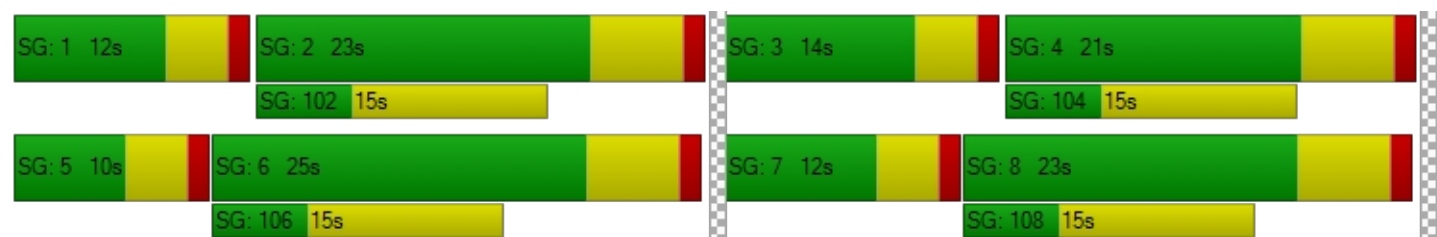
X, volume / capacity	0.38	0.47	0.22	0.68	0.51	0.13	0.61	0.74	0.68	0.59	0.59
d, Delay for Lane Group [s/veh]	32.33	16.02	13.97	33.45	14.74	7.61	33.54	27.07	33.51	24.20	24.25
Lane Group LOS	C	B	B	C	B	A	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.85	3.71	1.42	2.36	4.16	0.67	1.83	4.91	2.31	3.81	3.77
50th-Percentile Queue Length [ft]	21.17	92.77	35.55	58.91	104.04	16.84	45.73	122.80	57.72	95.27	94.25
95th-Percentile Queue Length [veh]	1.52	6.68	2.56	4.24	7.49	1.21	3.29	8.55	4.16	6.86	6.79
95th-Percentile Queue Length [ft]	38.10	166.99	63.99	106.05	187.27	30.32	82.31	213.66	103.90	171.48	169.65

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.33	16.02	13.97	33.45	14.74	7.61	33.54	27.07	27.07	33.51	24.22	24.25
Movement LOS	C	B	B	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.64			16.45			28.69			26.09		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.38											
Intersection LOS	C											
Intersection V/C	0.530											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.316

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵↻			↵			↵↻		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	37	208	0	0	214	156	106	0	18	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	35	1	0	204	0	0	0	2	6	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	243	1	0	418	156	106	0	20	6	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	61	0	0	105	39	27	0	5	2	0	0
Total Analysis Volume [veh/h]	38	243	1	0	418	156	106	0	20	6	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	21	0	18	30	0	9	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	19	19	6	32	3	29	29
g / C, Green / Cycle	0.32	0.32	0.32	0.32	0.32	0.11	0.54	0.04	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.04	0.15	0.00	0.25	0.11	0.07	0.01	0.00	0.00	0.00
s, saturation flow rate [veh/h]	868	1675	1018	1676	1425	1597	1425	1597	1676	1676
c, Capacity [veh/h]	183	530	307	531	451	173	771	68	796	796
d1, Uniform Delay [s]	26.96	16.40	0.00	18.66	15.73	25.55	6.41	27.61	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.55	0.62	0.00	2.64	0.45	3.50	0.06	0.56	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

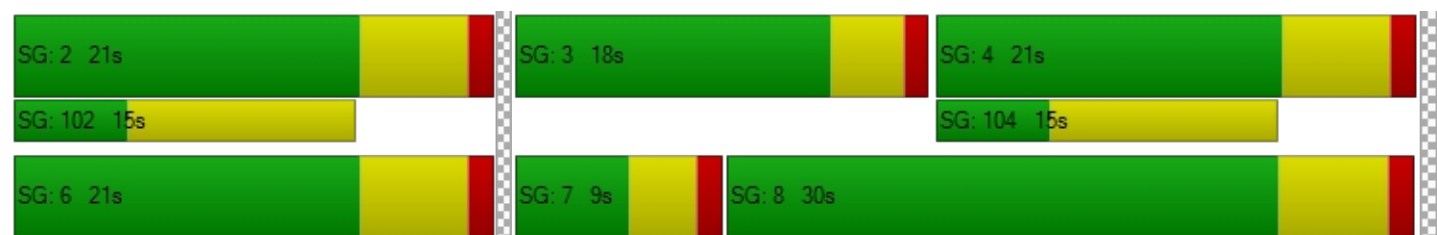
X, volume / capacity	0.21	0.46	0.00	0.79	0.35	0.61	0.03	0.09	0.00	0.00
d, Delay for Lane Group [s/veh]	27.51	17.02	0.00	21.30	16.19	29.05	6.48	28.17	0.00	0.00
Lane Group LOS	C	B	A	C	B	C	A	C	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	0.51	2.39	0.00	4.87	1.47	1.48	0.10	0.09	0.00	0.00
50th-Percentile Queue Length [ft]	12.74	59.78	0.00	121.81	36.68	36.97	2.52	2.16	0.00	0.00
95th-Percentile Queue Length [veh]	0.92	4.30	0.00	8.49	2.64	2.66	0.18	0.16	0.00	0.00
95th-Percentile Queue Length [ft]	22.93	107.60	0.00	212.31	66.03	66.54	4.53	3.89	0.00	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.51	17.02	17.02	0.00	21.30	16.19	29.05	6.48	6.48	28.17	0.00	0.00
Movement LOS	C	B	B	A	C	B	C	A	A	C	A	A
d_A, Approach Delay [s/veh]	18.43			19.91			25.46			28.17		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.25											
Intersection LOS	C											
Intersection V/C	0.316											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.342

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↑			↵ ↑ ↑			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	793	58	78	245	0	0	0	0	57	0	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	39	0	0	164	0	0	0	2	6	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	16	0	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	848	58	78	422	0	0	0	2	63	0	149
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	212	15	20	106	0	0	0	1	16	0	37
Total Analysis Volume [veh/h]	1	848	58	78	422	0	0	0	2	63	0	149
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	10	22	0	10	21	0	17	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	42	42	7	46	46	2	8	8	6	12	12
g / C, Green / Cycle	0.04	0.60	0.60	0.09	0.65	0.65	0.03	0.11	0.11	0.08	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.00	0.19	0.19	0.05	0.09	0.09	0.00	0.00	0.00	0.04	0.00	0.10
s, saturation flow rate [veh/h]	1597	3192	1622	1597	3192	1676	1597	1676	1482	1597	1676	1425
c, Capacity [veh/h]	62	1901	966	149	2073	1089	51	192	169	132	277	235
d1, Uniform Delay [s]	32.34	7.05	7.06	30.27	4.71	4.71	0.00	27.46	27.49	30.65	0.00	27.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	0.44	0.86	2.85	0.13	0.25	0.00	0.00	0.03	2.64	0.00	2.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

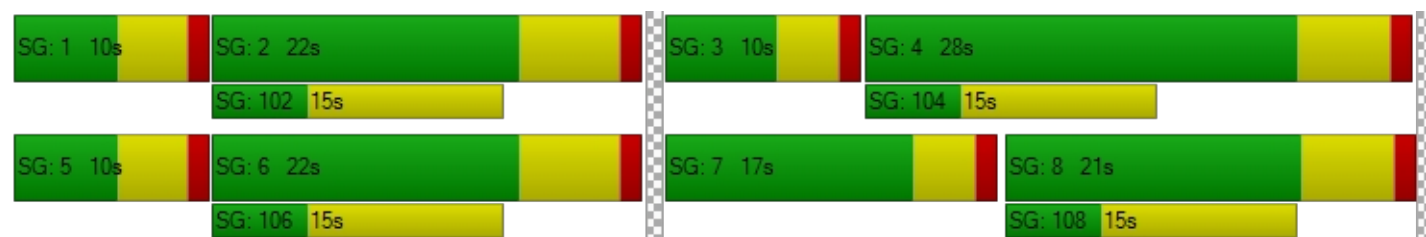
X, volume / capacity	0.02	0.32	0.32	0.52	0.13	0.13	0.00	0.00	0.01	0.48	0.00	0.63
d, Delay for Lane Group [s/veh]	32.44	7.49	7.92	33.12	4.84	4.96	0.00	27.46	27.52	33.28	0.00	30.05
Lane Group LOS	C	A	A	C	A	A	A	C	C	C	A	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.02	1.78	1.94	1.29	0.56	0.63	0.00	0.00	0.03	1.05	0.00	2.33
50th-Percentile Queue Length [ft]	0.43	44.54	48.38	32.26	14.06	15.69	0.00	0.00	0.73	26.21	0.00	58.26
95th-Percentile Queue Length [veh]	0.03	3.21	3.48	2.32	1.01	1.13	0.00	0.00	0.05	1.89	0.00	4.20
95th-Percentile Queue Length [ft]	0.77	80.17	87.08	58.07	25.31	28.23	0.00	0.00	1.31	47.18	0.00	104.88

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.44	7.62	7.92	33.12	4.89	4.96	0.00	27.46	27.52	33.28	15.03	30.05
Movement LOS	C	A	A	C	A	A	A	C	C	C	B	C
d_A, Approach Delay [s/veh]	7.66			9.29			27.52			31.01		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	11.24											
Intersection LOS	B											
Intersection V/C	0.342											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	12.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.476

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	783	108	29	852	64	82	127	48	71	136	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	2	45	0	0	0	3	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	814	108	31	913	64	82	127	51	71	136	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	204	27	8	228	16	21	32	13	18	34	7
Total Analysis Volume [veh/h]	48	814	108	31	913	64	82	127	51	71	136	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	12	21	0	18	27	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	32	32	4	31	31	18	18	18	18
g / C, Green / Cycle	0.08	0.53	0.53	0.07	0.52	0.52	0.30	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.08	0.02	0.29	0.04	0.07	0.08	0.04	0.16
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1096	1676	1425	1461
c, Capacity [veh/h]	132	1694	756	113	1657	740	278	500	425	514
d1, Uniform Delay [s]	26.02	8.86	7.14	26.40	9.72	7.27	23.73	15.99	15.33	17.40
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.66	0.98	0.40	1.28	1.33	0.23	0.58	0.26	0.12	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

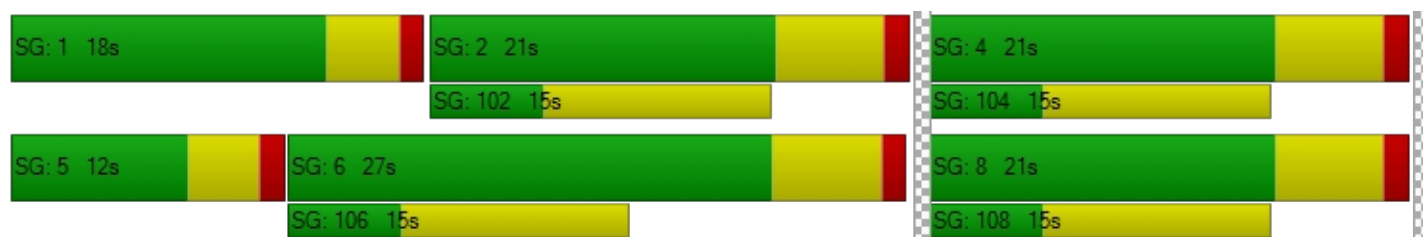
X, volume / capacity	0.36	0.48	0.14	0.27	0.55	0.09	0.29	0.25	0.12	0.46
d, Delay for Lane Group [s/veh]	27.68	9.84	7.54	27.68	11.05	7.50	24.32	16.26	15.45	18.03
Lane Group LOS	C	A	A	C	B	A	C	B	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.65	2.69	0.61	0.42	3.31	0.36	1.01	1.18	0.46	2.40
50th-Percentile Queue Length [ft]	16.31	67.17	15.22	10.61	82.71	9.05	25.28	29.57	11.40	59.95
95th-Percentile Queue Length [veh]	1.17	4.84	1.10	0.76	5.95	0.65	1.82	2.13	0.82	4.32
95th-Percentile Queue Length [ft]	29.36	120.90	27.39	19.11	148.87	16.29	45.50	53.22	20.51	107.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.68	9.84	7.54	27.68	11.05	7.50	24.32	16.26	15.45	18.03	18.03	18.03
Movement LOS	C	A	A	C	B	A	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	10.47			11.33			18.64			18.03		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	12.40											
Intersection LOS	B											
Intersection V/C	0.476											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type:	All-way stop	Delay (sec / veh):	14.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.669

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	243	5	28	215	24	56	50	20	7	48	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	37	0	0	212	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	280	5	28	427	24	56	50	22	7	48	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	70	1	7	107	6	14	13	6	2	12	4
Total Analysis Volume [veh/h]	49	280	5	28	427	24	56	50	22	7	48	14
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	686	715	588	580
Degree of Utilization, x	0.49	0.67	0.22	0.12

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	2.69	5.17	0.82	0.40
95th-Percentile Queue Length [ft]	67.15	129.22	20.60	10.06
Approach Delay [s/veh]	13.14	17.60	10.83	10.04
Approach LOS	B	C	B	B
Intersection Delay [s/veh]	14.75			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	7.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.294

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	220.00	100.00	970.00	200.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	1	950	16	30	401	3	10	3	0	37	4	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	40	0	0	172	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	16	0	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1006	16	30	586	3	10	3	0	39	4	83
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	252	4	8	147	1	3	1	0	10	1	21
Total Analysis Volume [veh/h]	1	1006	16	30	586	3	10	3	0	39	4	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	25	0	10	25	0	14	11	0	24	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	46	46	5	48	48	3	6	5	8	8
g / C, Green / Cycle	0.04	0.66	0.66	0.07	0.69	0.69	0.04	0.09	0.07	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.00	0.21	0.21	0.02	0.18	0.18	0.01	0.00	0.02	0.00	0.06
s, saturation flow rate [veh/h]	1597	3192	1663	1597	1676	1673	1597	1744	1597	1676	1425
c, Capacity [veh/h]	62	2100	1094	110	1153	1151	72	153	114	191	162
d1, Uniform Delay [s]	32.34	5.19	5.19	30.91	4.14	4.14	32.12	29.19	30.94	27.55	29.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	0.40	0.77	1.31	0.54	0.54	0.87	0.05	1.77	0.04	2.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.02	0.32	0.32	0.27	0.26	0.26	0.14	0.02	0.34	0.02	0.51
d, Delay for Lane Group [s/veh]	32.44	5.59	5.96	32.23	4.68	4.68	32.99	29.24	32.71	27.60	31.67
Lane Group LOS	C	A	A	C	A	A	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.02	1.52	1.69	0.49	1.14	1.14	0.17	0.05	0.65	0.06	1.34
50th-Percentile Queue Length [ft]	0.43	37.94	42.37	12.29	28.48	28.44	4.27	1.14	16.13	1.45	33.44
95th-Percentile Queue Length [veh]	0.03	2.73	3.05	0.89	2.05	2.05	0.31	0.08	1.16	0.10	2.41
95th-Percentile Queue Length [ft]	0.77	68.28	76.27	22.13	51.26	51.20	7.68	2.05	29.03	2.61	60.19

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.44	5.72	5.96	32.23	4.68	4.68	32.99	29.24	29.24	32.71	27.60	31.67
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	5.75			6.01			32.13			31.87		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.88											
Intersection LOS	A											
Intersection V/C	0.294											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.531

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	185.00	100.00	50.00	165.00	100.00	165.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	98	775	10	13	831	144	155	52	66	30	145	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	48	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	98	806	10	13	895	144	155	52	69	30	145	8
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	202	3	3	224	36	39	13	17	8	36	2
Total Analysis Volume [veh/h]	98	806	10	13	895	144	155	52	69	30	145	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	27	0	10	21	0	12	23	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	39	39	3	35	35	9	16	16	4	11
g / C, Green / Cycle	0.10	0.55	0.55	0.05	0.50	0.50	0.13	0.22	0.22	0.06	0.15
(v / s)_i Volume / Saturation Flow Rate	0.06	0.25	0.01	0.01	0.28	0.10	0.10	0.03	0.05	0.02	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1482	1597	1661
c, Capacity [veh/h]	154	1757	785	77	1605	716	214	374	330	102	254
d1, Uniform Delay [s]	30.46	9.46	7.12	31.95	12.02	9.63	29.09	21.81	22.16	31.26	27.66
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.35	0.86	0.03	1.01	1.40	0.63	4.64	0.17	0.31	1.59	2.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.64	0.46	0.01	0.17	0.56	0.20	0.73	0.14	0.21	0.29	0.60
d, Delay for Lane Group [s/veh]	34.81	10.32	7.15	32.97	13.43	10.26	33.73	21.98	22.48	32.85	29.94
Lane Group LOS	C	B	A	C	B	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.67	3.11	0.06	0.22	4.23	1.14	2.59	0.65	0.88	0.50	2.38
50th-Percentile Queue Length [ft]	41.83	77.79	1.52	5.52	105.87	28.39	64.85	16.23	22.02	12.49	59.41
95th-Percentile Queue Length [veh]	3.01	5.60	0.11	0.40	7.61	2.04	4.67	1.17	1.59	0.90	4.28
95th-Percentile Queue Length [ft]	75.30	140.03	2.73	9.93	190.24	51.11	116.73	29.22	39.63	22.48	106.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.81	10.32	7.15	32.97	13.43	10.26	33.73	21.98	22.48	32.85	29.94	29.94
Movement LOS	C	B	A	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	12.92			13.24			28.70			30.42		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	16.17											
Intersection LOS	B											
Intersection V/C	0.531											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	All-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	65	219	6	21	175	44	34	14	16	7	42	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	38	0	0	213	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	257	6	21	388	44	34	14	16	7	42	22
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	64	2	5	97	11	9	4	4	2	11	6
Total Analysis Volume [veh/h]	65	257	6	21	388	44	34	14	16	7	42	22
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	691	722	576	589
Degree of Utilization, x	0.47	0.63	0.11	0.12

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	2.57	4.47	0.37	0.41
95th-Percentile Queue Length [ft]	64.20	111.69	9.31	10.20
Approach Delay [s/veh]	12.84	16.02	10.02	9.94
Approach LOS	B	C	B	A
Intersection Delay [s/veh]	13.99			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	12.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration	⇐⇐⇐			⇑⇑⇑			⇐⇑⇑⇑					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	524	1	323	0	660	194	44	1188	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	63	0	0	0	33	0	0	5	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	5	0	0	0	8	0	0	9	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	592	1	323	0	701	194	44	1202	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	0	81	0	175	49	11	301	0	0	0	0
Total Analysis Volume [veh/h]	592	1	323	0	701	194	44	1202	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	3.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	22	0	0	20	0	18	38	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	30	30	5	37
g / C, Green / Cycle	0.32	0.32	0.32	0.51	0.51	0.08	0.62
(v / s)_i Volume / Saturation Flow Rate	0.21	0.21	0.26	0.21	0.22	0.02	0.30
s, saturation flow rate [veh/h]	1416	1416	1264	2831	1334	2750	4050
c, Capacity [veh/h]	449	449	400	1426	672	219	2497
d1, Uniform Delay [s]	17.71	17.71	18.81	9.37	9.52	25.83	6.27
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.67	1.67	3.88	0.91	2.12	0.45	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

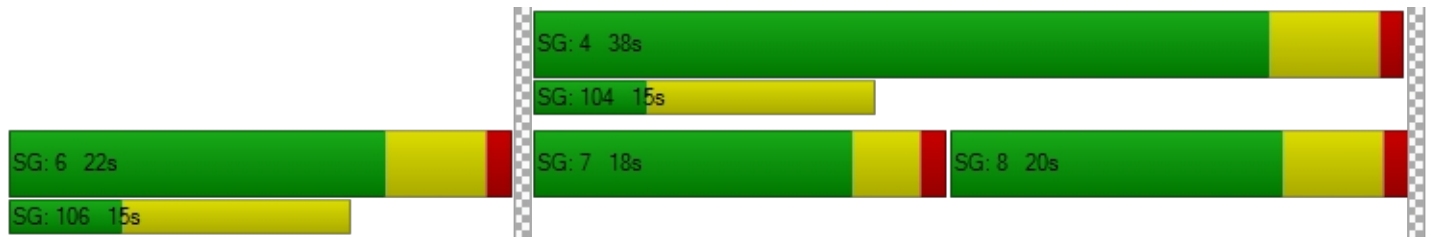
X, volume / capacity	0.66	0.66	0.81	0.42	0.44	0.20	0.48
d, Delay for Lane Group [s/veh]	19.38	19.38	22.69	10.27	11.64	26.27	6.94
Lane Group LOS	B	B	C	B	B	C	A
Critical Lane Group	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.23	3.23	3.92	2.04	2.28	0.28	1.89
50th-Percentile Queue Length [ft]	80.68	80.68	98.11	50.88	57.07	7.06	47.33
95th-Percentile Queue Length [veh]	5.81	5.81	7.06	3.66	4.11	0.51	3.41
95th-Percentile Queue Length [ft]	145.22	145.22	176.60	91.58	102.73	12.71	85.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	19.38	19.38	22.69	0.00	10.48	11.64	26.27	6.94	0.00	0.00	0.00	0.00
Movement LOS	B	B	C		B	B	C	A				
d_A, Approach Delay [s/veh]	20.55			10.73			7.62			0.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	12.41											
Intersection LOS	B											
Intersection V/C	0.552											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	42.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.836

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave			Grand Ave		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave			Grand Ave		
Base Volume Input [veh/h]	417	68	48	29	0	441	196	815	177	0	914	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	98	0	0	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	417	68	48	29	0	441	196	927	177	0	947	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	104	17	12	7	0	110	49	232	44	0	237	5
Total Analysis Volume [veh/h]	417	68	48	29	0	441	196	927	177	0	947	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	26	0	12	12	33	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No			No	No			No	
Maximum Recall		No		No			No	No			No	
Pedestrian Recall		No		No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	18	18	18	25	25	10	31	19	19
g / C, Green / Cycle	0.22	0.22	0.22	0.32	0.32	0.13	0.39	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.17	0.17	0.04	0.02	0.35	0.14	0.23	0.18	0.16
s, saturation flow rate [veh/h]	1416	1435	1264	1416	1264	1416	4050	4050	1466
c, Capacity [veh/h]	310	314	277	450	402	181	1572	954	345
d1, Uniform Delay [s]	29.40	29.40	25.36	19.01	27.29	34.89	19.41	28.48	27.99
k, delay calibration	0.11	0.11	0.11	0.11	0.40	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.19	4.13	0.29	0.06	69.59	56.36	1.63	5.68	11.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

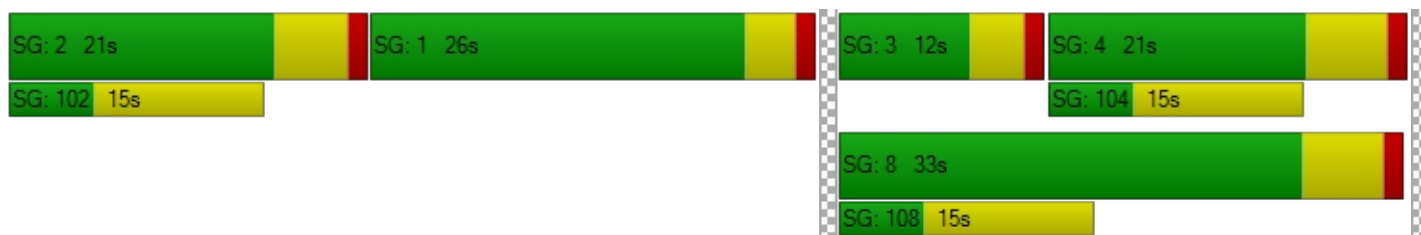
X, volume / capacity	0.78	0.78	0.17	0.06	1.10	1.08	0.59	0.76	0.70
d, Delay for Lane Group [s/veh]	33.58	33.53	25.65	19.07	96.88	91.25	21.04	34.16	39.24
Lane Group LOS	C	C	C	B	F	F	C	C	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	4.43	4.48	0.72	0.36	14.72	6.16	4.35	4.52	5.03
50th-Percentile Queue Length [ft]	110.74	112.09	18.05	8.93	367.96	154.05	108.76	112.94	125.66
95th-Percentile Queue Length [veh]	7.88	7.96	1.30	0.64	22.22	10.56	7.77	8.00	8.70
95th-Percentile Queue Length [ft]	197.03	198.91	32.49	16.08	555.59	263.96	194.28	200.08	217.58

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.56	33.53	25.65	19.07	0.00	96.88	91.25	21.04	0.00	0.00	35.35	39.24
Movement LOS	C	C	C	B		F	F	C			D	D
d_A, Approach Delay [s/veh]	32.84			92.08			33.30			35.43		
Approach LOS	C			F			C			D		
d_I, Intersection Delay [s/veh]	42.82											
Intersection LOS	D											
Intersection V/C	0.836											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	52	341	47	43	395	81	72	582	72	35	736	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	3	0	0	0	98	0	1	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	341	52	46	395	81	72	694	72	36	769	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	85	13	12	99	20	18	174	18	9	192	9
Total Analysis Volume [veh/h]	52	341	52	46	395	81	72	694	72	36	769	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	18	29	10	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	16	16	5	16	16	6	36	43	5	34	34
g / C, Green / Cycle	0.08	0.23	0.23	0.07	0.23	0.23	0.09	0.51	0.62	0.07	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.04	0.12	0.04	0.03	0.16	0.17	0.05	0.25	0.03	0.03	0.27	0.27
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1401	1416	2831	2237	1416	1487	1464
c, Capacity [veh/h]	109	663	296	105	344	324	122	1443	1306	96	730	719
d1, Uniform Delay [s]	30.94	23.33	21.40	31.02	24.75	24.81	30.78	11.15	6.26	31.21	12.46	12.46
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	0.62	0.28	2.87	2.70	2.99	4.44	1.15	0.02	2.41	3.02	3.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	0.51	0.18	0.44	0.71	0.72	0.59	0.48	0.06	0.38	0.55	0.55
d, Delay for Lane Group [s/veh]	34.13	23.95	21.68	33.89	27.45	27.79	35.23	12.30	6.28	33.62	15.48	15.53
Lane Group LOS	C	C	C	C	C	C	D	B	A	C	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.89	2.30	0.65	0.78	3.64	3.50	1.25	3.08	0.18	0.61	4.26	4.20
50th-Percentile Queue Length [ft]	22.14	57.40	16.24	19.53	91.03	87.60	31.16	76.89	4.49	15.27	106.41	105.06
95th-Percentile Queue Length [veh]	1.59	4.13	1.17	1.41	6.55	6.31	2.24	5.54	0.32	1.10	7.64	7.56
95th-Percentile Queue Length [ft]	39.84	103.32	29.22	35.15	163.85	157.68	56.08	138.41	8.09	27.48	190.99	189.11

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.13	23.95	21.68	33.89	27.58	27.79	35.23	12.30	6.28	33.62	15.51	15.53
Movement LOS	C	C	C	C	C	C	D	B	A	C	B	B
d_A, Approach Delay [s/veh]	24.87			28.17			13.75			16.28		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	19.27											
Intersection LOS	B											
Intersection V/C	0.526											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.599

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	62	635	227	26	707	302	114	316	32	162	603	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	3	0	0	0	113	0	1	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	635	232	29	707	302	114	443	32	163	638	53
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	159	58	7	177	76	29	111	8	41	160	13
Total Analysis Volume [veh/h]	62	635	232	29	707	302	114	443	32	163	638	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	10	22	0	17	28	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	23	23	4	21	21	8	28	28	7	27	27
g / C, Green / Cycle	0.08	0.32	0.32	0.06	0.31	0.31	0.12	0.40	0.40	0.10	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.18	0.02	0.25	0.24	0.08	0.16	0.16	0.06	0.23	0.04
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1452	2750	2831	1264
c, Capacity [veh/h]	117	917	409	90	864	386	165	591	577	277	1080	482
d1, Uniform Delay [s]	30.81	20.63	19.60	31.31	22.53	22.21	29.70	15.15	15.16	30.09	17.29	13.98
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.13	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.70	0.95	1.24	2.02	1.98	4.07	5.04	2.07	2.13	1.99	2.38	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

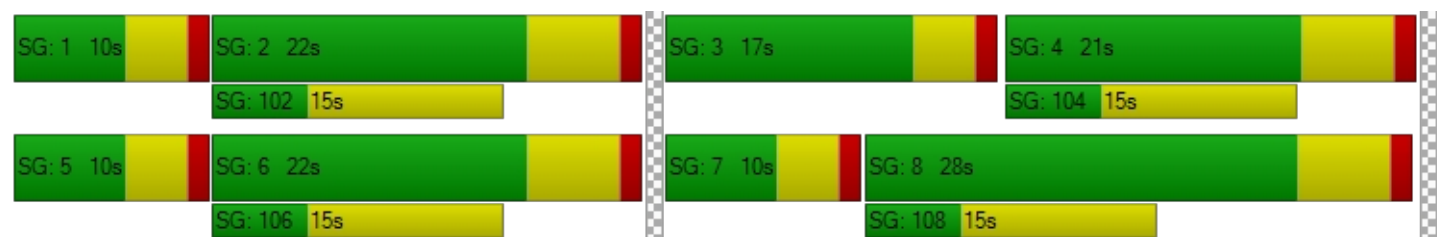
X, volume / capacity	0.53	0.69	0.57	0.32	0.82	0.78	0.69	0.41	0.41	0.59	0.59	0.11
d, Delay for Lane Group [s/veh]	34.51	21.58	20.84	33.33	24.51	26.28	34.74	17.22	17.29	32.08	19.67	14.44
Lane Group LOS	C	C	C	C	C	C	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.06	4.13	2.92	0.49	5.02	4.47	1.95	2.74	2.69	1.30	3.93	0.54
50th-Percentile Queue Length [ft]	26.53	103.19	73.06	12.28	125.59	111.67	48.74	68.41	67.31	32.56	98.23	13.54
95th-Percentile Queue Length [veh]	1.91	7.43	5.26	0.88	8.70	7.93	3.51	4.93	4.85	2.34	7.07	0.97
95th-Percentile Queue Length [ft]	47.75	185.75	131.50	22.11	217.48	198.32	87.74	123.14	121.17	58.61	176.81	24.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.51	21.58	20.84	33.33	24.51	26.28	34.74	17.25	17.29	32.08	19.67	14.44
Movement LOS	C	C	C	C	C	C	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	22.26			25.27			20.64			21.71		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	22.76											
Intersection LOS	C											
Intersection V/C	0.599											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.410

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↔↔↔			↔↔↔			↔↔↔			↔↔↔		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	180.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	24	131	60	57	73	77	73	294	22	47	605	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	4	0	0	0	132	0	1	23	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	131	65	61	73	77	73	440	22	48	643	82
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	33	16	15	18	19	18	110	6	12	161	21
Total Analysis Volume [veh/h]	24	131	65	61	73	77	73	440	22	48	643	82
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	13	29	0	10	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	11	11	6	12	12	6	40	40	5	40	40
g / C, Green / Cycle	0.06	0.15	0.15	0.08	0.18	0.18	0.09	0.58	0.58	0.08	0.57	0.57
(v / s)_j Volume / Saturation Flow Rate	0.02	0.09	0.05	0.04	0.05	0.06	0.05	0.11	0.11	0.03	0.23	0.06
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1451	1416	2831	1264
c, Capacity [veh/h]	83	228	194	116	262	223	123	1628	835	107	1596	713
d1, Uniform Delay [s]	31.53	27.49	26.43	30.85	24.98	25.29	30.78	7.08	7.09	30.97	8.62	7.12
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.87	2.26	1.00	3.70	0.57	0.92	4.53	0.25	0.50	2.94	0.76	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

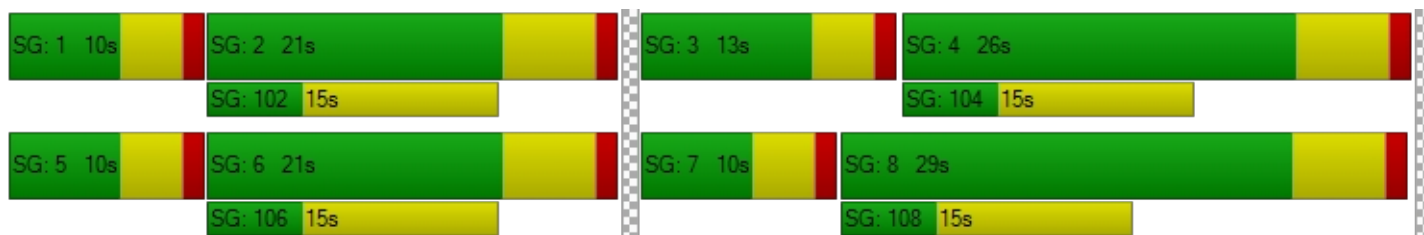
X, volume / capacity	0.29	0.57	0.33	0.53	0.28	0.35	0.59	0.19	0.19	0.45	0.40	0.12
d, Delay for Lane Group [s/veh]	33.40	29.76	27.44	34.56	25.55	26.21	35.31	7.33	7.59	33.91	9.37	7.45
Lane Group LOS	C	C	C	C	C	C	D	A	A	C	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.41	2.03	0.95	1.04	1.02	1.10	1.27	0.89	0.98	0.81	2.30	0.51
50th-Percentile Queue Length [ft]	10.22	50.75	23.85	26.12	25.39	27.43	31.63	22.34	24.57	20.37	57.42	12.84
95th-Percentile Queue Length [veh]	0.74	3.65	1.72	1.88	1.83	1.97	2.28	1.61	1.77	1.47	4.13	0.92
95th-Percentile Queue Length [ft]	18.40	91.34	42.93	47.02	45.70	49.37	56.94	40.21	44.22	36.67	103.35	23.11

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.40	29.76	27.44	34.56	25.55	26.21	35.31	7.41	7.59	33.91	9.37	7.45
Movement LOS	C	C	C	C	C	C	D	A	A	C	A	A
d_A, Approach Delay [s/veh]	29.47			28.39			11.23			10.69		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.38											
Intersection LOS	B											
Intersection V/C	0.410											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	16.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	145	763	32	24	702	169	89	165	94	46	335	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	8	0	15	36	0	0	61	87	0	10	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	15	21	0	0	16	0	0	0	14	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	792	32	39	754	169	89	226	195	46	345	47
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	198	8	10	189	42	22	57	49	12	86	12
Total Analysis Volume [veh/h]	175	792	32	39	754	169	89	226	195	46	345	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	17	25	0	13	21	0	0	22	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	9	29	29	5	25	25	20	20	20	20	20
g / C, Green / Cycle	0.15	0.49	0.49	0.08	0.41	0.41	0.33	0.33	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.11	0.25	0.02	0.02	0.24	0.12	0.10	0.13	0.14	0.04	0.24
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	889	1676	1425	1035	1642
c, Capacity [veh/h]	246	1559	696	125	1316	588	216	559	475	340	547
d1, Uniform Delay [s]	24.09	10.44	8.03	26.13	13.57	11.76	26.53	15.41	15.45	19.46	17.52
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.76	1.19	0.12	1.41	1.82	1.23	1.26	0.47	0.57	0.18	1.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

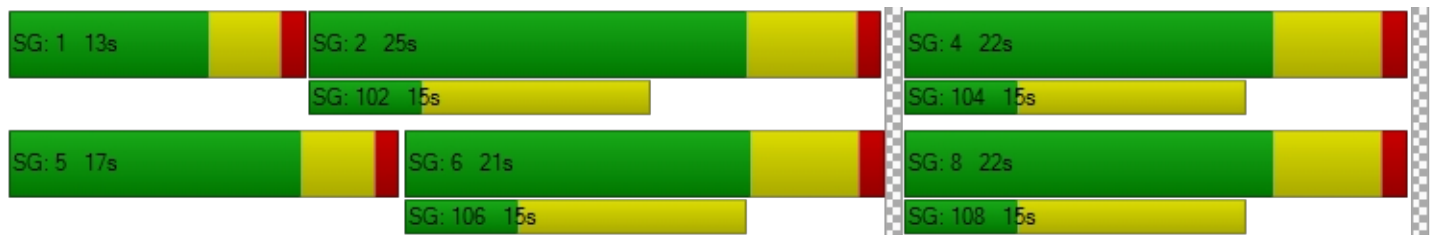
X, volume / capacity	0.71	0.51	0.05	0.31	0.57	0.29	0.41	0.40	0.41	0.14	0.72
d, Delay for Lane Group [s/veh]	27.85	11.62	8.15	27.54	15.38	12.99	27.79	15.88	16.02	19.63	19.29
Lane Group LOS	C	B	A	C	B	B	C	B	B	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.37	2.98	0.19	0.53	3.52	1.44	1.22	2.10	1.83	0.49	4.27
50th-Percentile Queue Length [ft]	59.31	74.53	4.84	13.26	87.90	35.95	30.40	52.59	45.78	12.20	106.80
95th-Percentile Queue Length [veh]	4.27	5.37	0.35	0.95	6.33	2.59	2.19	3.79	3.30	0.88	7.66
95th-Percentile Queue Length [ft]	106.77	134.16	8.70	23.86	158.22	64.71	54.71	94.67	82.40	21.95	191.54

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.85	11.62	8.15	27.54	15.38	12.99	27.79	15.88	16.02	19.63	19.29	19.29
Movement LOS	C	B	A	C	B	B	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	14.36			15.46			18.01			19.32		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.11											
Intersection LOS	B											
Intersection V/C	0.585											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	All-way stop	Delay (sec / veh):	49.1
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.058

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	21	166	22	35	115	22	32	163	9	47	389	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	13	38	0	0	214	0	0	0	76	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	204	22	35	329	22	32	163	85	47	389	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	51	6	9	82	6	8	41	21	12	97	18
Total Analysis Volume [veh/h]	34	204	22	35	329	22	32	163	85	47	389	71
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	436	463	450	507
Degree of Utilization, x	0.60	0.83	0.62	1.06

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	3.78	8.14	4.14	15.62
95th-Percentile Queue Length [ft]	94.48	203.39	103.49	390.62
Approach Delay [s/veh]	22.71	38.99	23.31	84.67
Approach LOS	C	E	C	F
Intersection Delay [s/veh]	49.13			
Intersection LOS	E			

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**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	18.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.486

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	500.00	100.00	280.00	320.00	100.00	75.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	40.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	173	876	239	30	356	82	39	130	47	151	275	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	41	35	0	174	0	0	0	0	192	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	9	7	0	9	0	0	0	0	7	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	926	281	30	539	82	39	130	47	350	275	50
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	232	70	8	135	21	10	33	12	88	69	13
Total Analysis Volume [veh/h]	173	926	281	30	539	82	39	130	47	350	275	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	14	25	13	11	22	0	10	21	14	13	24	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	11	36	36	5	31	31	5	10	23	11	16	16
g / C, Green / Cycle	0.15	0.52	0.52	0.07	0.44	0.44	0.07	0.14	0.32	0.15	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.11	0.29	0.20	0.02	0.17	0.06	0.01	0.04	0.03	0.11	0.16	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	3101	3192	1482	3101	1676	1425
c, Capacity [veh/h]	242	1654	739	111	1393	622	217	460	425	477	382	324
d1, Uniform Delay [s]	28.26	11.44	10.12	30.87	13.38	11.80	30.65	26.73	18.38	28.25	24.97	21.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.92	1.37	1.49	1.29	0.81	0.44	0.39	0.33	0.11	2.21	2.57	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

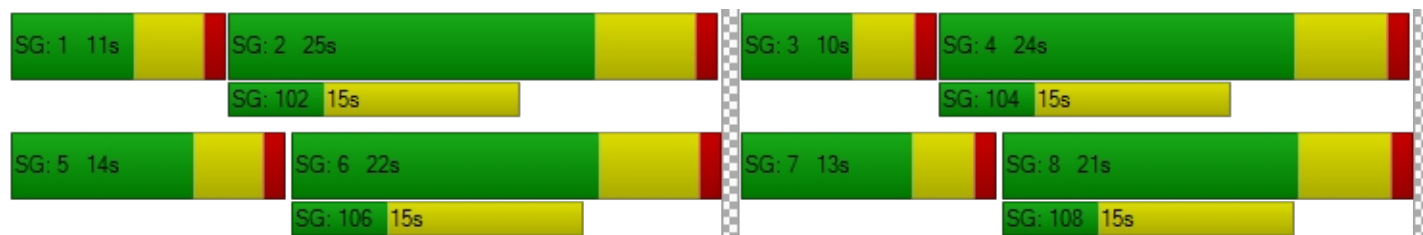
X, volume / capacity	0.72	0.56	0.38	0.27	0.39	0.13	0.18	0.28	0.11	0.73	0.72	0.15
d, Delay for Lane Group [s/veh]	32.18	12.82	11.61	32.16	14.19	12.24	31.04	27.07	18.49	30.47	27.54	21.85
Lane Group LOS	C	B	B	C	B	B	C	C	B	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.82	4.24	2.41	0.48	2.55	0.72	0.30	0.91	0.51	2.69	4.04	0.61
50th-Percentile Queue Length [ft]	70.42	105.88	60.22	12.10	63.77	17.95	7.47	22.70	12.85	67.23	101.03	15.33
95th-Percentile Queue Length [veh]	5.07	7.61	4.34	0.87	4.59	1.29	0.54	1.63	0.93	4.84	7.27	1.10
95th-Percentile Queue Length [ft]	126.76	190.25	108.40	21.79	114.79	32.31	13.44	40.87	23.13	121.01	181.86	27.60

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.18	12.82	11.61	32.16	14.19	12.24	31.04	27.07	18.49	30.47	27.54	21.85
Movement LOS	C	B	B	C	B	B	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	15.00			14.77			25.92			28.64		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.90											
Intersection LOS	B											
Intersection V/C	0.486											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	23.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.831

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌			⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	106	428	253	95	173	24	24	261	60	133	398	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	35	0	0	192	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	13	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	428	253	95	173	24	24	310	60	133	603	174
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	107	63	24	43	6	6	78	15	33	151	44
Total Analysis Volume [veh/h]	106	428	253	95	173	24	24	310	60	133	603	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	34	10	10	34	0	26	16	0	10	33	10
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	0.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
g_i, Effective Green Time [s]	8	32	8	32	24	14	14	8	0	0
g / C, Green / Cycle	0.11	0.46	0.11	0.46	0.34	0.20	0.20	0.11	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.14	0.43	0.13	0.12	0.03	0.18	0.04	0.08	0.36	0.12
s, saturation flow rate [veh/h]	732	1573	732	1641	732	1676	1425	1597	1676	1425
c, Capacity [veh/h]	167	719	167	750	313	335	285	182	0	0
d1, Uniform Delay [s]	33.15	18.19	32.94	11.72	18.37	27.48	23.38	29.95	0.00	0.00
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.96	22.82	3.03	0.85	0.10	10.79	0.36	5.48	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

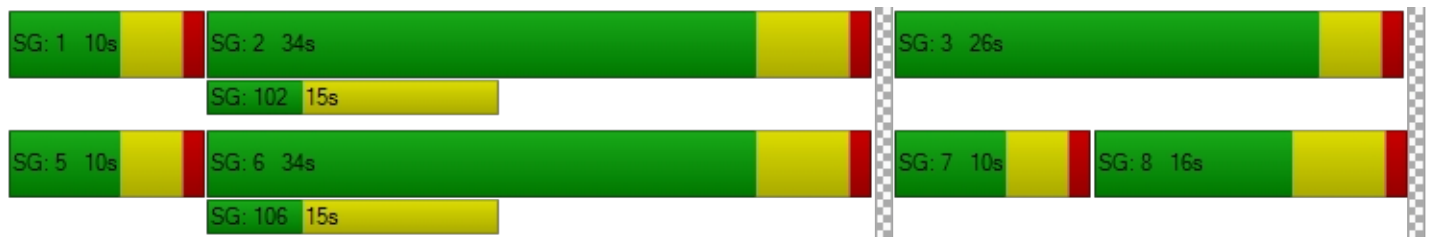
X, volume / capacity	0.64	0.95	0.57	0.26	0.08	0.92	0.21	0.73	0.00	0.00
d, Delay for Lane Group [s/veh]	37.11	41.00	35.97	12.57	18.47	38.27	23.75	35.44	0.00	0.00
Lane Group LOS	D	D	D	B	B	D	C	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.97	13.22	1.71	1.79	0.27	5.65	0.79	2.29	0.00	0.00
50th-Percentile Queue Length [ft]	49.23	330.62	42.83	44.84	6.75	141.29	19.85	57.31	0.00	0.00
95th-Percentile Queue Length [veh]	3.54	19.19	3.08	3.23	0.49	9.55	1.43	4.13	0.00	0.00
95th-Percentile Queue Length [ft]	88.61	479.72	77.09	80.71	12.15	238.76	35.73	103.16	0.00	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.11	41.00	41.00	35.97	12.57	12.57	18.47	38.27	23.75	35.44	0.00	0.00
Movement LOS	D	D	D	D	B	B	B	D	C	D	A	A
d_A, Approach Delay [s/veh]	40.48			20.18			34.85			5.18		
Approach LOS	D			C			C			A		
d_I, Intersection Delay [s/veh]	23.58											
Intersection LOS	C											
Intersection V/C	0.831											

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑		↑↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	263	470	0	425	338	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	182	0	35	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	11	0	14	2	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	263	663	0	474	350	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	166	0	119	88	0
Total Analysis Volume [veh/h]	263	663	0	474	350	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.4	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	49	0	0	11	11	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	32	32	24	24
g / C, Green / Cycle	0.53	0.53	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.08	0.47	0.10	0.11
s, saturation flow rate [veh/h]	3101	1425	4567	3192
c, Capacity [veh/h]	1648	758	1835	1282
d1, Uniform Delay [s]	7.19	12.31	11.98	12.06
k, delay calibration	0.11	0.20	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	5.91	0.34	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.16	0.88	0.26	0.27
d, Delay for Lane Group [s/veh]	7.24	18.22	12.32	12.59
Lane Group LOS	A	B	B	B
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	0.72	7.37	1.30	1.48
50th-Percentile Queue Length [ft]	18.02	184.34	32.59	37.06
95th-Percentile Queue Length [veh]	1.30	11.83	2.35	2.67
95th-Percentile Queue Length [ft]	32.43	295.68	58.66	66.71

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	7.24	18.22	0.00	12.32	12.59	0.00
Movement LOS	A	B		B	B	
d_A, Approach Delay [s/veh]	15.10		12.32		12.59	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	13.84					
Intersection LOS	B					
Intersection V/C	0.575					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.087

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	180	149	300	385	322	244
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	34	0	10
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	2	12	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	180	149	303	431	322	256
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	37	76	108	81	64
Total Analysis Volume [veh/h]	180	149	303	431	322	256
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	31	0	29	31	0	29
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	10	10	10	46	58	46	46
g / C, Green / Cycle	0.17	0.17	0.17	0.76	0.97	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.07	0.07	0.07	0.07	0.30	0.17	0.06
s, saturation flow rate [veh/h]	1597	1521	1425	4567	1425	1874	4567
c, Capacity [veh/h]	281	268	251	3459	1287	1448	3459
d1, Uniform Delay [s]	21.96	21.96	21.97	1.89	0.40	3.07	1.87
k, delay calibration	0.11	0.11	0.11	0.50	0.16	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.96	1.01	1.09	0.05	0.23	0.36	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

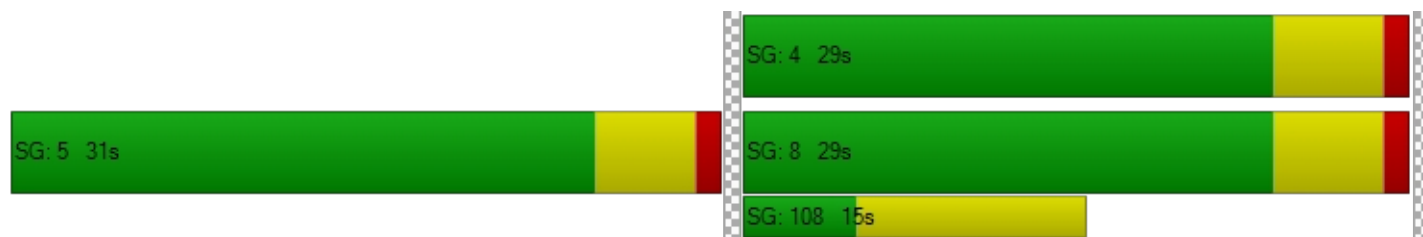
X, volume / capacity	0.41	0.41	0.41	0.09	0.33	0.22	0.07
d, Delay for Lane Group [s/veh]	22.91	22.98	23.07	1.94	0.63	3.43	1.91
Lane Group LOS	C	C	C	A	A	A	A
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.42	1.37	1.29	0.14	0.08	0.45	0.12
50th-Percentile Queue Length [ft]	35.58	34.17	32.34	3.46	2.02	11.23	2.89
95th-Percentile Queue Length [veh]	2.56	2.46	2.33	0.25	0.15	0.81	0.21
95th-Percentile Queue Length [ft]	64.05	61.51	58.22	6.23	3.64	20.21	5.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	22.94	23.04	1.94	0.63	3.43	1.91
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	22.98		1.17		2.76	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	6.10					
Intersection LOS	A					
Intersection V/C	0.087					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	75.00	140.00	100.00	70.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	156	877	3	8	803	35	56	12	125	5	48	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	7	0	93	30	0	0	3	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	36	0	0	30	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	156	920	3	101	863	35	56	15	125	5	48	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	230	1	25	216	9	14	4	31	1	12	7
Total Analysis Volume [veh/h]	156	920	3	101	863	35	56	15	125	5	48	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.0	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	21	0	18	28	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	40	40	6	38	38	8	8	8	8	8
g / C, Green / Cycle	0.14	0.66	0.66	0.11	0.63	0.63	0.13	0.13	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.10	0.29	0.00	0.06	0.27	0.02	0.04	0.01	0.08	0.00	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1435	1676	1482	1253	1579
c, Capacity [veh/h]	221	2112	943	169	2008	896	172	222	196	260	209
d1, Uniform Delay [s]	24.67	4.82	3.44	25.61	5.66	4.23	27.26	22.78	24.66	23.76	23.69
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.07	0.66	0.01	3.36	0.67	0.08	1.09	0.13	3.40	0.03	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.70	0.44	0.00	0.60	0.43	0.04	0.33	0.07	0.64	0.02	0.35
d, Delay for Lane Group [s/veh]	28.75	5.48	3.45	28.97	6.34	4.32	28.35	22.91	28.06	23.79	24.70
Lane Group LOS	C	A	A	C	A	A	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.23	1.96	0.01	1.41	1.87	0.12	0.73	0.18	1.70	0.06	0.92
50th-Percentile Queue Length [ft]	55.85	49.00	0.25	35.15	46.67	3.05	18.25	4.41	42.62	1.49	23.07
95th-Percentile Queue Length [veh]	4.02	3.53	0.02	2.53	3.36	0.22	1.31	0.32	3.07	0.11	1.66
95th-Percentile Queue Length [ft]	100.53	88.20	0.44	63.27	84.00	5.50	32.85	7.93	76.71	2.69	41.53

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.75	5.48	3.45	28.97	6.34	4.32	28.35	22.91	28.06	23.79	24.70	24.70
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	8.84			8.55			27.75			24.65		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	10.82											
Intersection LOS	B											
Intersection V/C	0.452											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	49.4
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.077

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	30	205	2	3	149	23	12	3	10	1	8	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	10	0	240	50	0	0	91	4	0	16	41
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	215	2	243	199	23	12	94	14	1	24	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	54	1	61	50	6	3	24	4	0	6	11
Total Analysis Volume [veh/h]	31	215	2	243	199	23	12	94	14	1	24	43
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.18	0.00	0.00	0.08	0.48	0.02	0.01	0.13	0.05
d_M, Delay for Movement [s/veh]	7.74	0.00	0.00	8.24	0.00	0.00	49.42	44.81	30.63	40.34	26.03	11.62
Movement LOS	A	A	A	A	A	A	E	E	D	E	D	B
95th-Percentile Queue Length [veh]	0.67	0.67	0.67	1.55	1.55	1.55	3.18	3.18	3.18	0.68	0.68	0.68
95th-Percentile Queue Length [ft]	16.84	16.84	16.84	38.75	38.75	38.75	79.47	79.47	79.47	16.90	16.90	16.90
d_A, Approach Delay [s/veh]	0.97			4.31			43.61			17.13		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	9.59											
Intersection LOS	E											

**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.043

**Intersection Setup**

Name	Eucalyptus Ave					
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↵↵		↑		↵↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Eucalyptus Ave					
Base Volume Input [veh/h]	14	1	3	10	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	25	260	71	4	46
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	26	263	81	4	49
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	7	66	20	1	12
Total Analysis Volume [veh/h]	26	26	263	81	4	49
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.04	0.04	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.15	10.29	0.00	0.00	8.15	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.13	0.11	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft]	3.33	2.86	0.00	0.00	0.26	0.00
d_A, Approach Delay [s/veh]	10.72		0.00		0.62	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.31					
Intersection LOS	B					

**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	14	834	97	126	743	45	4	5	5	185	53	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	77	30	0	0	0	1	0	14	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	6	30	0	0	0	0	0	6	0	36
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	834	180	186	743	45	4	6	5	205	53	247
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	209	45	47	186	11	1	2	1	51	13	62
Total Analysis Volume [veh/h]	14	834	180	186	743	45	4	6	5	205	53	247
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	21	0	15	25	0	0	24	0	0	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	22	22	10	29	29	22	22
g / C, Green / Cycle	0.06	0.37	0.37	0.16	0.48	0.48	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.01	0.26	0.13	0.12	0.24	0.24	0.01	0.36
s, saturation flow rate [veh/h]	1597	3192	1425	1597	1676	1643	1357	1391
c, Capacity [veh/h]	91	1188	530	257	799	783	573	595
d1, Uniform Delay [s]	26.91	16.00	13.53	23.90	10.79	10.79	12.14	18.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.25
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.78	3.48	1.73	3.83	2.22	2.26	0.02	7.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.15	0.70	0.34	0.72	0.50	0.50	0.03	0.85
d, Delay for Lane Group [s/veh]	27.69	19.48	15.27	27.73	13.01	13.05	12.16	26.41
Lane Group LOS	C	B	B	C	B	B	B	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.19	4.59	1.72	2.52	3.29	3.24	0.11	7.33
50th-Percentile Queue Length [ft]	4.87	114.78	43.04	62.91	82.29	80.89	2.80	183.17
95th-Percentile Queue Length [veh]	0.35	8.11	3.10	4.53	5.93	5.82	0.20	11.77
95th-Percentile Queue Length [ft]	8.77	202.63	77.47	113.23	148.13	145.61	5.05	294.15

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.69	19.48	15.27	27.73	13.03	13.05	12.16	12.16	12.16	26.41	26.41	26.41
Movement LOS	C	B	B	C	B	B	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	18.86			15.83			12.16			26.41		
Approach LOS	B			B			B			C		
d_I, Intersection Delay [s/veh]	19.16											
Intersection LOS	B											
Intersection V/C	0.741											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type:	All-way stop	Delay (sec / veh):	22.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.860

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merrill Ave Eastbound			Merrill Ave Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave Southbound			Merrill Ave Eastbound			Merrill Ave Westbound		
Base Volume Input [veh/h]	0	0	0	71	0	84	52	119	0	0	379	177
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	54	0	0	0	108	0	0	21	11
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	36	0	0	42	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	125	0	84	52	263	0	0	442	188
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	31	0	21	13	66	0	0	111	47
Total Analysis Volume [veh/h]	0	0	0	125	0	84	52	263	0	0	442	188
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	506	589	654	733
Degree of Utilization, x	0.00	0.36	0.48	0.86

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.00	1.60	2.62	10.25
95th-Percentile Queue Length [ft]	0.00	39.94	65.53	256.15
Approach Delay [s/veh]	0.00	12.44	13.49	30.22
Approach LOS	A	B	B	D
Intersection Delay [s/veh]	22.44			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Two-way stop	Delay (sec / veh):	29.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.213

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			←↑			+			←↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	22	1	5	4	0	0	0	179	22	14	490	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	26	0	8	44	119	0	0	23	102
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	9	0	8	7	29	0	0	34	8
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	1	5	39	0	16	51	327	22	14	547	116
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	1	10	0	4	13	82	6	4	137	29
Total Analysis Volume [veh/h]	22	1	5	39	0	16	51	327	22	14	547	116
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.12	0.01	0.01	0.21	0.00	0.03	0.06	0.00	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	27.69	26.90	12.79	29.94	23.27	12.47	9.12	0.00	0.00	8.01	0.00	0.00
Movement LOS	D	D	B	D	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.46	0.46	0.46	0.78	0.10	0.10	2.21	2.21	2.21	0.04	0.00	0.00
95th-Percentile Queue Length [ft]	11.45	11.45	11.45	19.48	2.49	2.49	55.21	55.21	55.21	0.88	0.00	0.00
d_A, Approach Delay [s/veh]	25.00			24.86			1.16			0.17		
Approach LOS	D			C			A			A		
d_I, Intersection Delay [s/veh]	2.28											
Intersection LOS	D											

**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	44.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.901

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	1	0	1	1	0	0
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	70.00	100.00	70.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	335	1158	55	44	381	138	107	11	65	34	34	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	234	0	0	0	0	365	76	0	43	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	16	0	0	0	0	15	17	0	19	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	585	1158	55	44	381	518	200	11	127	34	34	65
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	146	290	14	11	95	130	50	3	32	9	9	16
Total Analysis Volume [veh/h]	585	1158	55	44	381	518	200	11	127	34	34	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	33	31	0	25	23	13	13	24	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	31	57	57	6	32	32	11	14	14	5	8	8
g / C, Green / Cycle	0.34	0.63	0.63	0.07	0.35	0.35	0.12	0.16	0.16	0.06	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.37	0.36	0.04	0.01	0.23	0.36	0.13	0.01	0.09	0.02	0.02	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	3101	1676	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	550	2006	896	207	588	500	195	267	227	90	157	134
d1, Uniform Delay [s]	29.50	9.75	6.46	39.76	24.55	29.22	39.50	32.00	34.90	40.94	37.73	38.73
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	56.44	1.22	0.13	0.51	5.45	49.99	36.43	0.06	2.14	2.60	0.68	2.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

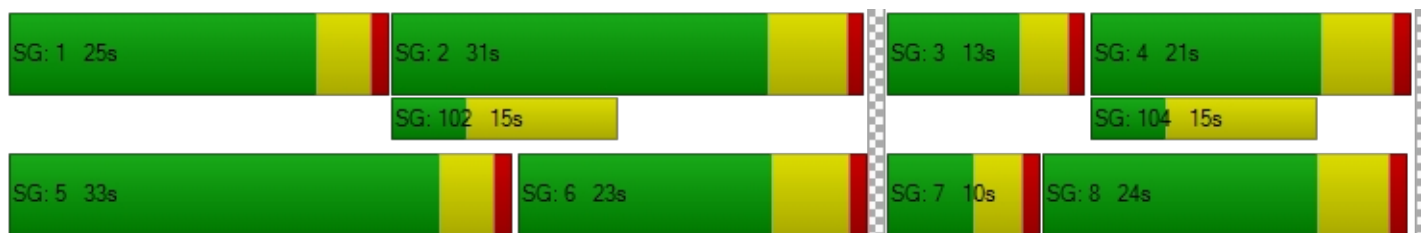
X, volume / capacity	1.06	0.58	0.06	0.21	0.65	1.04	1.02	0.04	0.56	0.38	0.22	0.49
d, Delay for Lane Group [s/veh]	85.94	10.96	6.59	40.27	30.00	79.21	75.93	32.06	37.04	43.54	38.41	41.46
Lane Group LOS	F	B	A	D	C	F	F	C	D	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	19.57	5.73	0.37	0.46	7.24	16.86	6.11	0.20	2.60	0.77	0.70	1.42
50th-Percentile Queue Length [ft]	489.26	143.32	9.31	11.53	181.12	421.55	152.78	5.01	65.00	19.21	17.51	35.43
95th-Percentile Queue Length [veh]	27.94	9.66	0.67	0.83	11.66	24.16	10.27	0.36	4.68	1.38	1.26	2.55
95th-Percentile Queue Length [ft]	698.47	241.49	16.75	20.75	291.47	604.07	256.64	9.02	116.99	34.59	31.52	63.78

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	85.94	10.96	6.59	40.27	30.00	79.21	75.93	32.06	37.04	43.54	38.41	41.46
Movement LOS	F	B	A	D	C	F	F	C	D	D	D	D
d_A, Approach Delay [s/veh]	35.22			57.51			59.89			41.21		
Approach LOS	D			E			E			D		
d_I, Intersection Delay [s/veh]	44.61											
Intersection LOS	D											
Intersection V/C	0.901											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	76.6
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↔		↔↓		↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	350.00	250.00	100.00	100.00	200.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	651	118	154	311	260	901
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	65	0	30	13	0	169
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	6	0	11	8	0	11
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	722	118	195	332	260	1081
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	181	30	49	83	65	270
Total Analysis Volume [veh/h]	722	118	195	332	260	1081
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	2	7	1	6	7	4
Auxiliary Signal Groups		2,7				1,4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	5.2	3.2	3.6	5.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	41	33	36	77	33	33
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	39	72	34	75	31	67
g / C, Green / Cycle	0.35	0.65	0.31	0.68	0.28	0.61
(v / s)_i Volume / Saturation Flow Rate	0.39	0.07	0.11	0.18	0.15	0.68
s, saturation flow rate [veh/h]	1863	1583	1774	1863	1774	1583
c, Capacity [veh/h]	660	1005	548	1270	500	927
d1, Uniform Delay [s]	35.50	7.94	29.50	6.78	33.24	22.80
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	63.18	0.24	0.39	0.50	0.86	86.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

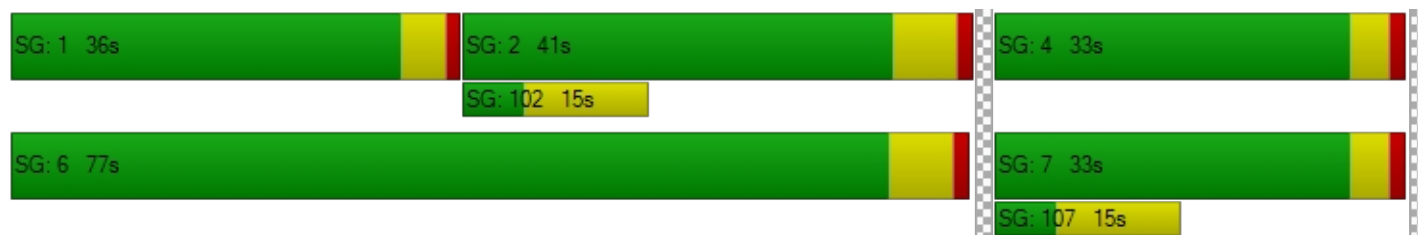
X, volume / capacity	1.09	0.12	0.36	0.26	0.52	1.17
d, Delay for Lane Group [s/veh]	98.68	8.18	29.89	7.28	34.10	109.35
Lane Group LOS	F	A	C	A	C	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	27.89	1.01	3.85	2.57	5.79	43.15
50th-Percentile Queue Length [ft]	697.22	25.17	96.34	64.31	144.71	1078.65
95th-Percentile Queue Length [veh]	38.83	1.81	6.94	4.63	9.73	60.92
95th-Percentile Queue Length [ft]	970.66	45.30	173.41	115.75	243.35	1522.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	98.68	8.18	29.89	7.28	34.10	109.35
Movement LOS	F	A	C	A	C	F
d_A, Approach Delay [s/veh]	85.96		15.64		94.76	
Approach LOS	F		B		F	
d_I, Intersection Delay [s/veh]	76.63					
Intersection LOS	E					
Intersection V/C	0.786					

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	24.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	200.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	165	393	406	300	299	111	163	741	40	258	458	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	33	0	0	0	0	22	4	20	5	0	114	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	11	0	0	11	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	198	393	406	300	299	133	167	772	45	258	583	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	98	102	75	75	33	42	193	11	65	146	18
Total Analysis Volume [veh/h]	198	393	406	300	299	133	167	772	45	258	583	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	24	12	12	21	13	13	22	15	12	21	12
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	27	27	10	29	29	7	17	17	9	19	19
g / C, Green / Cycle	0.11	0.38	0.38	0.14	0.41	0.41	0.10	0.24	0.24	0.13	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.28	0.10	0.09	0.09	0.05	0.17	0.03	0.08	0.18	0.05
s, saturation flow rate [veh/h]	3101	4567	1425	3101	3192	1425	3101	4567	1425	3101	3192	1425
c, Capacity [veh/h]	341	1728	539	429	1298	579	316	1110	346	391	853	381
d1, Uniform Delay [s]	29.61	14.80	18.92	28.77	13.60	13.59	29.84	24.14	20.71	29.15	22.99	19.78
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.56	0.31	9.39	2.08	0.41	0.92	1.37	0.80	0.17	1.90	0.98	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

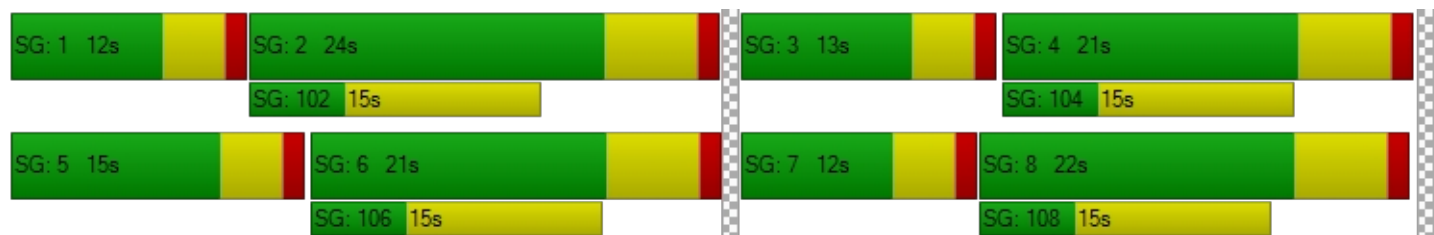
X, volume / capacity	0.58	0.23	0.75	0.70	0.23	0.23	0.53	0.70	0.13	0.66	0.68	0.19
d, Delay for Lane Group [s/veh]	31.18	15.11	28.31	30.85	14.01	14.52	31.21	24.94	20.88	31.05	23.97	20.01
Lane Group LOS	C	B	C	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.55	1.30	6.37	2.35	1.42	1.35	1.31	3.61	0.55	2.03	4.00	0.84
50th-Percentile Queue Length [ft]	38.83	32.55	159.26	58.81	35.58	33.70	32.71	90.20	13.63	50.63	100.08	20.98
95th-Percentile Queue Length [veh]	2.80	2.34	10.51	4.23	2.56	2.43	2.36	6.49	0.98	3.65	7.21	1.51
95th-Percentile Queue Length [ft]	69.89	58.60	262.74	105.85	64.05	60.66	58.88	162.36	24.53	91.13	180.14	37.76

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.18	15.11	28.31	30.85	14.01	14.52	31.21	24.94	20.88	31.05	23.97	20.01
Movement LOS	C	B	C	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	23.68			21.01			25.82			25.66		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.22											
Intersection LOS	C											
Intersection V/C	0.634											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↑↶			↶			↵↑↶		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	152	0	393	0	994	478	557	578	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	6	0	3	18	0	108	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	2	0	1	10	0	9	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	152	0	401	0	998	506	557	695	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	38	0	100	0	250	127	139	174	0
Total Analysis Volume [veh/h]	0	0	0	152	0	401	0	998	506	557	695	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0	
Auxiliary Signal Groups													
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-	
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0	
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0	
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0	
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
Split [s]	0	0	0	0	19	0	0	26	0	15	41	0	
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0	
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0	
Rest In Walk					No			No			No		
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
Minimum Recall					No			No		No	No		
Maximum Recall					No			No		No	No		
Pedestrian Recall					No			No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		13	13	13	27	27	14	43
g / C, Green / Cycle		0.22	0.22	0.22	0.45	0.45	0.23	0.72
(v / s)_i Volume / Saturation Flow Rate		0.10	0.14	0.14	0.31	0.36	0.18	0.22
s, saturation flow rate [veh/h]		1597	1425	1425	3192	1425	3101	3192
c, Capacity [veh/h]		346	309	309	1444	645	716	2287
d1, Uniform Delay [s]		20.34	21.41	21.41	13.09	13.95	21.63	3.08
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.88	2.29	2.29	2.74	9.31	1.87	0.34
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

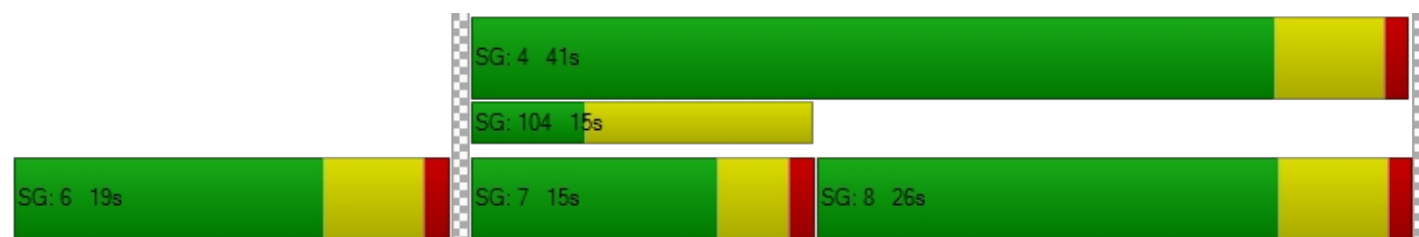
X, volume / capacity		0.44	0.65	0.65	0.69	0.79	0.78	0.30
d, Delay for Lane Group [s/veh]		21.21	23.71	23.71	15.83	23.26	23.50	3.43
Lane Group LOS		C	C	C	B	C	C	A
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		1.72	2.47	2.47	4.75	6.21	3.40	0.72
50th-Percentile Queue Length [ft]		43.00	61.72	61.72	118.78	155.19	84.95	17.89
95th-Percentile Queue Length [veh]		3.10	4.44	4.44	8.33	10.29	6.12	1.29
95th-Percentile Queue Length [ft]		77.40	111.10	111.10	208.15	257.34	152.90	32.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	21.21	23.71	23.71	0.00	15.83	23.26	23.50	3.43	0.00
Movement LOS				C	C	C		B	C	C	A	
d_A, Approach Delay [s/veh]	0.00			23.02			18.33			12.36		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	16.85											
Intersection LOS	B											
Intersection V/C	0.675											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↑↵						↵↑↵			↵↑↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	208	0	295	0	0	0	701	441	0	0	915	312
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	98	0	0	0	0	0	2	1	0	0	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	9	0	0	0	0	0	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	315	0	295	0	0	0	704	442	0	0	925	312
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	0	74	0	0	0	176	111	0	0	231	78
Total Analysis Volume [veh/h]	315	0	295	0	0	0	704	442	0	0	925	312
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	60	60	60		60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19		16	37	19	19
g / C, Green / Cycle	0.32	0.32	0.32		0.27	0.62	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.14		0.23	0.14	0.29	0.22
s, saturation flow rate [veh/h]	1597	1505	1425		3101	3192	3192	1425
c, Capacity [veh/h]	506	477	451		827	1968	1011	451
d1, Uniform Delay [s]	16.18	16.19	16.20		20.87	5.12	19.72	17.94
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	2.77	2.94		2.59	0.06	3.77	1.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

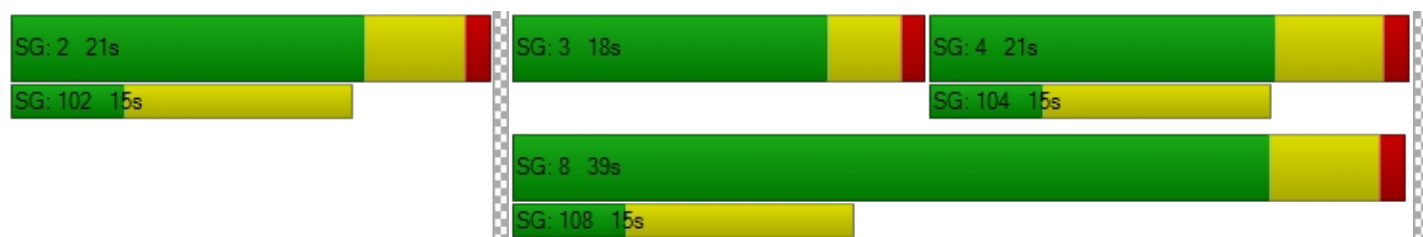
X, volume / capacity	0.42	0.43	0.43		0.85	0.22	0.92	0.69
d, Delay for Lane Group [s/veh]	18.78	18.96	19.14		23.47	5.17	23.50	19.84
Lane Group LOS	B	B	B		C	A	C	B
Critical Lane Group	No	No	Yes		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	2.36	2.25	2.16		4.34	0.80	5.77	3.45
50th-Percentile Queue Length [ft]	58.98	56.36	54.05		108.60	19.96	144.32	86.37
95th-Percentile Queue Length [veh]	4.25	4.06	3.89		7.76	1.44	9.71	6.22
95th-Percentile Queue Length [ft]	106.16	101.45	97.29		194.05	35.92	242.84	155.47

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	18.84	18.96	19.08	0.00	0.00	0.00	23.47	5.17	0.00	0.00	23.50	19.84
Movement LOS	B	B	B				C	A			C	B
d_A, Approach Delay [s/veh]	18.95			0.00			16.41			22.58		
Approach LOS	B			A			B			C		
d_I, Intersection Delay [s/veh]	19.48											
Intersection LOS	B											
Intersection V/C	0.652											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	52	628	17	159	528	235	62	173	22	19	703	239
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	77	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	6	0	0	6	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	711	17	159	548	235	62	173	22	19	703	239
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	178	4	40	137	59	16	43	6	5	176	60
Total Analysis Volume [veh/h]	52	711	17	159	548	235	62	173	22	19	703	239
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	12	24	11	11	26	0	10	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	20	20	10	25	25	6	28	28	4	26	26
g / C, Green / Cycle	0.08	0.29	0.29	0.14	0.35	0.35	0.08	0.40	0.40	0.05	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.01	0.11	0.28	0.28	0.04	0.07	0.07	0.01	0.33	0.33
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1337	1416	1487	1430	1416	1487	1360
c, Capacity [veh/h]	109	816	364	202	526	473	116	596	573	76	554	507
d1, Uniform Delay [s]	30.94	23.67	17.97	28.97	20.21	20.21	30.86	13.47	13.49	31.75	20.58	20.58
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.28	0.28
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	12.30	0.24	6.61	11.09	12.21	3.79	0.13	0.14	1.68	11.82	12.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

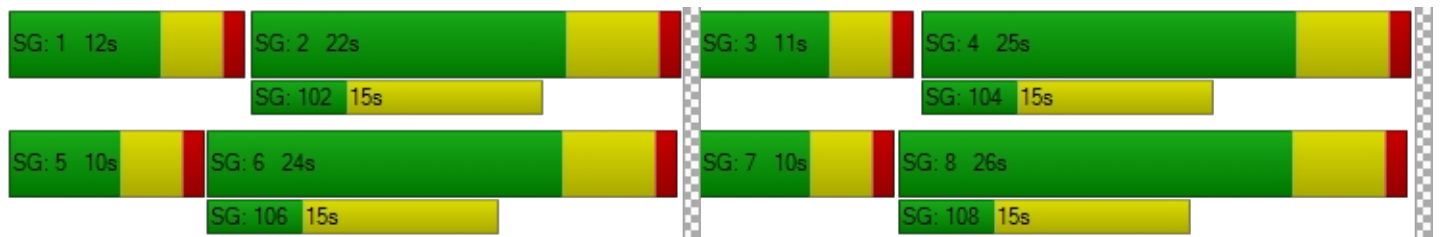
X, volume / capacity	0.48	0.87	0.05	0.79	0.78	0.78	0.54	0.17	0.17	0.25	0.89	0.89
d, Delay for Lane Group [s/veh]	34.13	35.97	18.21	35.57	31.30	32.42	34.65	13.59	13.62	33.43	32.40	33.32
Lane Group LOS	C	D	B	D	C	C	C	B	B	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.89	6.39	0.21	2.84	7.15	6.58	1.06	0.89	0.88	0.33	8.32	7.73
50th-Percentile Queue Length [ft]	22.14	159.73	5.14	70.99	178.78	164.49	26.59	22.37	22.02	8.14	207.91	193.33
95th-Percentile Queue Length [veh]	1.59	10.53	0.37	5.11	11.54	10.79	1.91	1.61	1.59	0.59	13.05	12.29
95th-Percentile Queue Length [ft]	39.84	263.37	9.26	127.79	288.42	269.66	47.86	40.27	39.64	14.65	326.14	307.35

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.13	35.97	18.21	35.57	31.58	32.42	34.65	13.61	13.62	33.43	32.67	33.32
Movement LOS	C	D	B	D	C	C	C	B	B	C	C	C
d_A, Approach Delay [s/veh]	35.46			32.46			18.69			32.85		
Approach LOS	D			C			B			C		
d_I, Intersection Delay [s/veh]	32.18											
Intersection LOS	C											
Intersection V/C	0.738											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type:	Signalized	Delay (sec / veh):	24.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	2	1	0	0	1	0	1	2	0	0
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	23	493	478	56	542	19	2	151	18	893	201	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	61	0	0	11	3	16	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	4	2	2	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	558	478	56	557	24	20	151	18	893	201	23
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	140	120	14	139	6	5	38	5	223	50	6
Total Analysis Volume [veh/h]	23	558	478	56	557	24	20	151	18	893	201	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	26	12	23	0	10	21	0	26	37	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	31	57	6	32	32	4	12	24	32
g / C, Green / Cycle	0.05	0.38	0.71	0.07	0.40	0.40	0.05	0.14	0.30	0.39
(v / s)_i Volume / Saturation Flow Rate	0.01	0.18	0.34	0.04	0.18	0.18	0.01	0.09	0.29	0.14
s, saturation flow rate [veh/h]	1573	3146	1404	1573	1652	1628	1573	1652	3056	1623
c, Capacity [veh/h]	84	1201	954	115	663	654	80	240	917	640
d1, Uniform Delay [s]	36.39	18.58	6.24	35.66	17.41	17.42	36.51	32.16	27.69	17.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.75	1.29	1.88	3.20	2.12	2.16	1.62	2.70	9.01	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

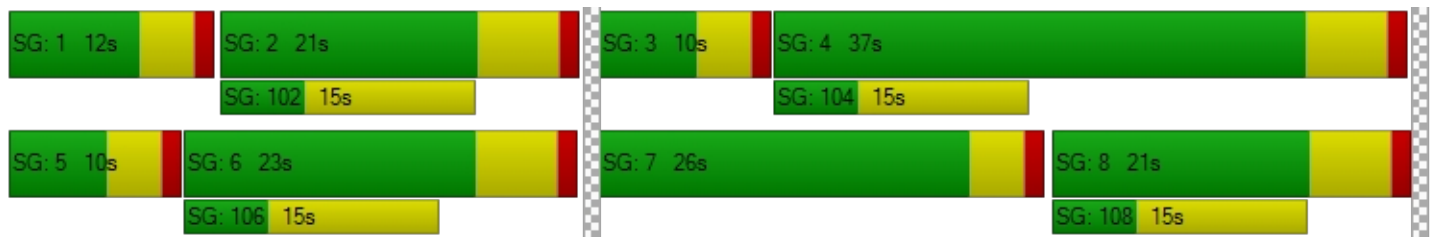
X, volume / capacity	0.27	0.46	0.50	0.49	0.44	0.44	0.25	0.63	0.97	0.35
d, Delay for Lane Group [s/veh]	38.13	19.87	8.11	38.86	19.54	19.58	38.13	34.86	36.70	17.33
Lane Group LOS	D	B	A	D	B	B	D	C	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.45	3.74	3.23	1.10	3.92	3.88	0.40	2.78	8.85	2.69
50th-Percentile Queue Length [ft]	11.35	93.41	80.73	27.62	98.10	97.04	9.90	69.58	221.36	67.17
95th-Percentile Queue Length [veh]	0.82	6.73	5.81	1.99	7.06	6.99	0.71	5.01	13.73	4.84
95th-Percentile Queue Length [ft]	20.43	168.14	145.32	49.72	176.59	174.67	17.81	125.25	343.36	120.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	38.13	19.87	8.11	38.86	19.56	19.58	38.13	34.86	0.00	36.70	17.33	17.33
Movement LOS	D	B	A	D	B	B	D	C		D	B	B
d_A, Approach Delay [s/veh]	14.96			21.25			35.24			32.82		
Approach LOS	B			C			D			C		
d_I, Intersection Delay [s/veh]	24.15											
Intersection LOS	C											
Intersection V/C	0.663											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	311	666	199	94	376	423	268	549	140	205	660	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	55	0	0	10	3	10	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	5	0	0	6	2	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	726	199	94	392	428	279	549	140	205	660	96
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	182	50	24	98	107	70	137	35	51	165	24
Total Analysis Volume [veh/h]	311	726	199	94	392	428	279	549	140	205	660	96
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.6	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	25	0	10	23	12	12	22	0	13	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	30	30	7	27	27	10	17	17	8	16	16
g / C, Green / Cycle	0.14	0.43	0.43	0.10	0.38	0.38	0.14	0.25	0.25	0.12	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.10	0.16	0.14	0.03	0.09	0.30	0.09	0.12	0.10	0.07	0.14	0.07
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	443	1938	605	303	1732	540	425	1132	353	359	1035	323
d1, Uniform Delay [s]	28.58	13.79	13.48	29.39	14.76	19.28	28.64	22.50	21.96	29.30	24.47	22.44
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.04	0.56	1.45	0.58	0.30	11.32	1.73	0.32	0.72	1.43	0.66	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

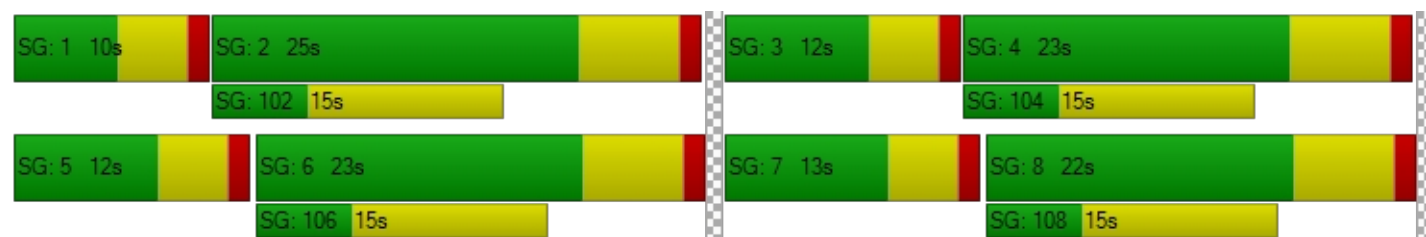
X, volume / capacity	0.70	0.37	0.33	0.31	0.23	0.79	0.66	0.48	0.40	0.57	0.64	0.30
d, Delay for Lane Group [s/veh]	30.62	14.34	14.93	29.97	15.06	30.60	30.38	22.83	22.68	30.74	25.13	22.95
Lane Group LOS	C	B	B	C	B	C	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.43	2.35	2.06	0.71	1.30	7.03	2.16	2.38	1.82	1.59	3.07	1.25
50th-Percentile Queue Length [ft]	60.73	58.86	51.41	17.83	32.38	175.85	54.08	59.55	45.58	39.83	76.87	31.28
95th-Percentile Queue Length [veh]	4.37	4.24	3.70	1.28	2.33	11.38	3.89	4.29	3.28	2.87	5.53	2.25
95th-Percentile Queue Length [ft]	109.31	105.95	92.55	32.09	58.29	284.59	97.34	107.19	82.05	71.70	138.36	56.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.62	14.34	14.93	29.97	15.06	30.60	30.38	22.83	22.68	30.74	25.13	22.95
Movement LOS	C	B	B	C	B	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.53			23.87			24.98			26.11		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	23.04											
Intersection LOS	C											
Intersection V/C	0.635											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 46: Hellman Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	10.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.221

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	↵↵		↑↵		↵↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	139	183	111	86	33	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	183	111	86	33	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	46	28	22	8	5
Total Analysis Volume [veh/h]	139	183	111	86	33	19
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.8	0.0	4.8	0.0	0.0	4.8
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	30	0	30	0	0	30
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	28	28	28	28	28	28
g / C, Green / Cycle	0.47	0.47	0.47	0.47	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.10	0.14	0.07	0.08	0.04	0.01
s, saturation flow rate [veh/h]	1416	1264	1487	1288	943	1487
c, Capacity [veh/h]	661	590	694	601	503	694
d1, Uniform Delay [s]	9.46	9.98	9.14	9.24	10.97	8.64
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.72	1.37	0.43	0.59	0.25	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.21	0.31	0.14	0.16	0.07	0.03
d, Delay for Lane Group [s/veh]	10.19	11.34	9.57	9.83	11.23	8.72
Lane Group LOS	B	B	A	A	B	A
Critical Lane Group	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.99	1.41	0.67	0.69	0.26	0.12
50th-Percentile Queue Length [ft]	24.71	35.29	16.71	17.25	6.49	3.02
95th-Percentile Queue Length [veh]	1.78	2.54	1.20	1.24	0.47	0.22
95th-Percentile Queue Length [ft]	44.48	63.53	30.07	31.04	11.68	5.44

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	10.19	11.34	9.60	9.83	11.23	8.72
Movement LOS	B	B	A	A	B	A
d_A, Approach Delay [s/veh]	10.84		9.70		10.31	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	10.40					
Intersection LOS	B					
Intersection V/C	0.221					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 47: Hellman Ave/Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

**Intersection Setup**

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		↑		⇐⇐	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	188	510	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	77	11	59	74	136	404
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	16	19	17	23	22	15
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	30	76	285	668	419
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	8	19	71	167	105
Total Analysis Volume [veh/h]	93	30	76	285	668	419
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.8	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	22	0	0	38	38	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C	C
C, Cycle Length [s]	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	20	20	36	36	36
g / C, Green / Cycle	0.33	0.33	0.60	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.07	0.02	0.46	0.37	0.42
s, saturation flow rate [veh/h]	1416	1264	784	1487	1309
c, Capacity [veh/h]	472	421	543	892	785
d1, Uniform Delay [s]	14.27	13.66	8.12	7.57	8.21
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.93	0.33	6.30	3.09	4.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.20	0.07	0.66	0.61	0.69
d, Delay for Lane Group [s/veh]	15.20	13.98	14.42	10.66	13.18
Lane Group LOS	B	B	B	B	B
Critical Lane Group	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.90	0.28	2.66	3.62	4.18
50th-Percentile Queue Length [ft]	22.40	6.93	66.54	90.44	104.47
95th-Percentile Queue Length [veh]	1.61	0.50	4.79	6.51	7.52
95th-Percentile Queue Length [ft]	40.32	12.47	119.77	162.79	188.05

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	15.20	13.98	14.42	14.42	11.13	13.18
Movement LOS	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	14.91		14.42		11.92	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	12.73					
Intersection LOS	B					
Intersection V/C	0.526					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 66: Archibald Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	5.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.484

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Eucalyptus			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Eucalyptus			Eucalyptus Ave		
Base Volume Input [veh/h]	0	1326	27	14	650	0	0	0	0	10	0	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	76	0	0	365	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	17	0	0	15	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1419	27	14	1030	0	0	0	0	10	0	50
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	355	7	4	258	0	0	0	0	3	0	13
Total Analysis Volume [veh/h]	0	1419	27	14	1030	0	0	0	0	10	0	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	0.0	4.8	3.6	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	10	32	0	57	79	0	0	21	10	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	91	91	4	93	93	8	8	8	8
g / C, Green / Cycle	0.02	0.83	0.83	0.04	0.84	0.84	0.08	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.00	0.43	0.43	0.01	0.31	0.31	0.00	0.00	0.00	0.04
s, saturation flow rate [veh/h]	3101	1676	1665	1597	1676	1676	1214	1676	1425	1432
c, Capacity [veh/h]	74	1388	1379	66	1417	1417	101	128	109	147
d1, Uniform Delay [s]	0.00	2.86	2.87	51.00	1.90	1.90	0.00	0.00	0.00	48.95
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	1.41	1.42	1.59	0.72	0.72	0.00	0.00	0.00	1.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

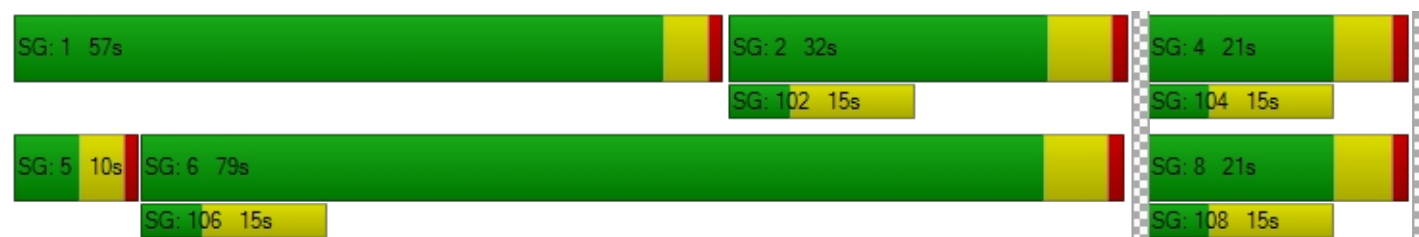
X, volume / capacity	0.00	0.52	0.52	0.21	0.36	0.36	0.00	0.00	0.00	0.41
d, Delay for Lane Group [s/veh]	0.00	4.27	4.29	52.59	2.62	2.62	0.00	0.00	0.00	50.76
Lane Group LOS	A	A	A	D	A	A	A	A	A	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.00	2.98	2.97	0.40	1.33	1.33	0.00	0.00	0.00	1.63
50th-Percentile Queue Length [ft]	0.00	74.55	74.36	9.90	33.18	33.18	0.00	0.00	0.00	40.75
95th-Percentile Queue Length [veh]	0.00	5.37	5.35	0.71	2.39	2.39	0.00	0.00	0.00	2.93
95th-Percentile Queue Length [ft]	0.00	134.19	133.85	17.82	59.72	59.72	0.00	0.00	0.00	73.34

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	4.28	4.29	52.59	2.62	2.62	0.00	0.00	0.00	50.76	50.76	50.76
Movement LOS	A	A	A	D	A	A	A	A	A	D	D	D
d_A, Approach Delay [s/veh]	4.28			3.29			0.00			50.76		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	4.97											
Intersection LOS	A											
Intersection V/C	0.484											

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	27.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.724

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	223	895	174	95	956	99	125	426	103	157	435	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	18	0	0	6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	4	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	917	174	95	966	99	125	426	103	157	435	89
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	229	44	24	242	25	31	107	26	39	109	22
Total Analysis Volume [veh/h]	223	917	174	95	966	99	125	426	103	157	435	89
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	24	0	12	22	0	9	25	0	9	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	12	26	26	7	20	20	32	23	23	32	23
g / C, Green / Cycle	0.17	0.36	0.36	0.09	0.29	0.29	0.46	0.33	0.33	0.46	0.33
(v / s)_i Volume / Saturation Flow Rate	0.14	0.29	0.12	0.06	0.22	0.22	0.13	0.16	0.16	0.16	0.31
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1664	979	1676	1565	987	1693
c, Capacity [veh/h]	274	1164	519	149	915	477	336	549	513	472	565
d1, Uniform Delay [s]	27.93	19.83	16.10	30.58	22.81	22.82	17.05	18.90	18.92	14.39	22.51
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.25
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.84	5.44	1.73	4.43	6.04	11.16	0.68	0.70	0.76	0.41	14.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

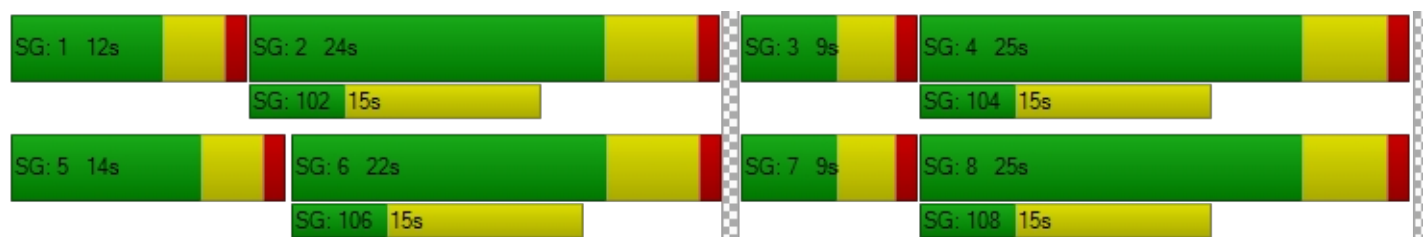
X, volume / capacity	0.81	0.79	0.33	0.64	0.76	0.77	0.37	0.50	0.50	0.33	0.93
d, Delay for Lane Group [s/veh]	33.77	25.27	17.83	35.00	28.85	33.98	17.74	19.59	19.68	14.80	36.59
Lane Group LOS	C	C	B	D	C	C	B	B	B	B	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.75	6.68	2.04	1.63	5.49	6.41	1.17	3.27	3.09	1.48	9.50
50th-Percentile Queue Length [ft]	93.87	166.93	50.92	40.71	137.23	160.36	29.31	81.84	77.27	36.92	237.57
95th-Percentile Queue Length [veh]	6.76	10.91	3.67	2.93	9.33	10.57	2.11	5.89	5.56	2.66	14.56
95th-Percentile Queue Length [ft]	168.97	272.87	91.65	73.27	233.29	264.20	52.75	147.31	139.08	66.46	363.96

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.77	25.27	17.83	35.00	30.26	33.98	17.74	19.62	19.68	14.80	36.59	36.59
Movement LOS	C	C	B	D	C	C	B	B	B	B	D	D
d_A, Approach Delay [s/veh]	25.73			30.97			19.27			31.57		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	27.26											
Intersection LOS	C											
Intersection V/C	0.724											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.607

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	181	681	76	104	1078	112	117	245	268	242	338	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	44	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	182	725	76	104	1092	112	117	245	268	242	338	86
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	181	19	26	273	28	29	61	67	61	85	22
Total Analysis Volume [veh/h]	182	725	76	104	1092	112	117	245	268	242	338	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	30	0	10	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	7	29	29	7	29	29	28	19	19	28	19	19
g / C, Green / Cycle	0.10	0.42	0.42	0.09	0.41	0.41	0.40	0.27	0.27	0.40	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.17	0.03	0.25	0.25	0.11	0.15	0.18	0.24	0.13	0.13
s, saturation flow rate [veh/h]	3101	3192	1597	3101	3192	1598	1060	1676	1482	1025	1676	1626
c, Capacity [veh/h]	327	1345	673	291	1307	654	456	454	401	406	466	452
d1, Uniform Delay [s]	29.75	14.07	14.09	29.74	16.30	16.30	16.39	21.80	22.73	18.86	20.93	20.95
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.12	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.48	0.88	1.76	0.74	2.16	4.27	0.29	1.00	1.93	1.57	0.71	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.56	0.40	0.40	0.36	0.61	0.61	0.26	0.54	0.67	0.60	0.46	0.46
d, Delay for Lane Group [s/veh]	31.23	14.95	15.85	30.49	18.46	20.57	16.69	22.80	24.65	20.43	21.64	21.69
Lane Group LOS	C	B	B	C	B	C	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.41	2.62	2.81	0.79	4.63	5.02	1.21	3.24	3.76	2.82	2.72	2.66
50th-Percentile Queue Length [ft]	35.14	65.60	70.14	19.66	115.69	125.49	30.23	80.89	94.00	70.61	68.08	66.62
95th-Percentile Queue Length [veh]	2.53	4.72	5.05	1.42	8.16	8.69	2.18	5.82	6.77	5.08	4.90	4.80
95th-Percentile Queue Length [ft]	63.26	118.09	126.25	35.39	203.89	217.34	54.41	145.60	169.21	127.09	122.55	119.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.23	15.19	15.85	30.49	19.02	20.57	16.69	22.80	24.65	20.43	21.66	21.69
Movement LOS	C	B	B	C	B	C	B	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.21			20.06			22.45			21.21		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	20.19											
Intersection LOS	C											
Intersection V/C	0.607											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.478

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	142	342	62	38	650	35	48	316	340	259	170	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	25	6	0	8	0	0	0	1	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	2	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	369	68	38	660	35	48	316	341	261	170	18
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	92	17	10	165	9	12	79	85	65	43	5
Total Analysis Volume [veh/h]	146	369	68	38	660	35	48	316	341	261	170	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.0	3.2	4.8	3.0	3.0	4.4	3.2	3.0	4.4	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	14	21	14	14	21	12	12	21	14	14	23	14
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	12	36	47	5	29	36	5	12	26	9	16	23
g / C, Green / Cycle	0.17	0.52	0.67	0.07	0.41	0.51	0.07	0.17	0.37	0.13	0.23	0.33
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.05	0.01	0.14	0.02	0.02	0.10	0.24	0.08	0.05	0.01
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	532	2353	915	216	1888	692	225	555	488	395	729	421
d1, Uniform Delay [s]	25.22	8.95	4.70	30.68	14.08	9.49	30.58	26.52	19.90	29.11	22.00	17.61
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.13	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	0.14	0.16	0.39	0.51	0.03	0.47	0.92	2.13	1.90	0.16	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

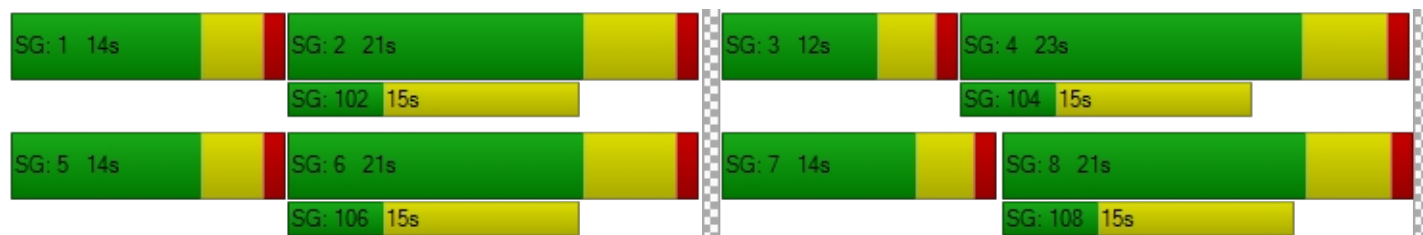
X, volume / capacity	0.27	0.16	0.07	0.18	0.35	0.05	0.21	0.57	0.70	0.66	0.23	0.04
d, Delay for Lane Group [s/veh]	25.49	9.09	4.86	31.06	14.59	9.52	31.05	27.45	22.04	31.01	22.17	17.65
Lane Group LOS	C	A	A	C	B	A	C	C	C	C	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.00	0.84	0.30	0.30	2.16	0.24	0.37	2.30	4.53	2.05	1.06	0.19
50th-Percentile Queue Length [ft]	24.97	21.09	7.43	7.39	54.07	6.12	9.33	57.61	113.22	51.18	26.60	4.85
95th-Percentile Queue Length [veh]	1.80	1.52	0.53	0.53	3.89	0.44	0.67	4.15	8.02	3.68	1.91	0.35
95th-Percentile Queue Length [ft]	44.95	37.96	13.37	13.30	97.32	11.01	16.79	103.70	200.47	92.12	47.87	8.73

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	25.49	9.09	4.86	31.06	14.59	9.52	31.05	27.45	22.04	31.01	22.17	17.65
Movement LOS	C	A	A	C	B	A	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	12.70			15.21			25.08			27.13		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.60											
Intersection LOS	B											
Intersection V/C	0.478											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.665

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	212	982	0	0	856	491	0	0	0	432	0	334
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	18	0	0	6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	15	4	0	0	4	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	237	1004	0	0	866	491	0	0	0	432	0	334
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	251	0	0	217	123	0	0	0	108	0	84
Total Analysis Volume [veh/h]	237	1004	0	0	866	491	0	0	0	432	0	334
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	23	44	0	0	21	0	0	0	0	0	16	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	12	42	28	28		14	14	14
g / C, Green / Cycle	0.20	0.70	0.47	0.47		0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.15	0.31	0.27	0.34		0.17	0.17	0.17
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1532	1425
c, Capacity [veh/h]	317	2237	1498	669		371	356	331
d1, Uniform Delay [s]	22.65	3.92	11.60	12.90		21.18	21.23	21.33
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	3.55	0.65	1.63	7.03		2.54	2.77	3.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	0.45	0.58	0.73		0.71	0.72	0.74
d, Delay for Lane Group [s/veh]	26.20	4.57	13.23	19.93		23.72	24.00	24.54
Lane Group LOS	C	A	B	B		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	3.11	1.41	3.60	5.42		3.26	3.19	3.08
50th-Percentile Queue Length [ft]	77.68	35.28	90.06	135.47		81.46	79.86	77.11
95th-Percentile Queue Length [veh]	5.59	2.54	6.48	9.24		5.86	5.75	5.55
95th-Percentile Queue Length [ft]	139.83	63.50	162.11	230.91		146.62	143.74	138.79

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.20	4.57	0.00	0.00	13.23	19.93	0.00	0.00	0.00	23.83	24.00	24.40
Movement LOS	C	A			B	B				C	C	C
d_A, Approach Delay [s/veh]	8.70		15.66			0.00			24.07			
Approach LOS	A		B			A			C			
d_I, Intersection Delay [s/veh]	15.01											
Intersection LOS	B											
Intersection V/C	0.665											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							+					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	843	439	286	1007	0	347	2	234	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	6	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	4	0	0	0	19	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	890	439	286	1017	0	347	2	255	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	223	110	72	254	0	87	1	64	0	0	0
Total Analysis Volume [veh/h]	0	890	439	286	1017	0	347	2	255	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	22	43	0	0	17	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	25	25	14	41	15	15	
g / C, Green / Cycle	0.42	0.42	0.23	0.68	0.25	0.25	
(v / s)_j Volume / Saturation Flow Rate	0.28	0.30	0.18	0.32	0.20	0.20	
s, saturation flow rate [veh/h]	3192	1482	1597	3192	1597	1443	
c, Capacity [veh/h]	1343	623	366	2181	399	361	
d1, Uniform Delay [s]	13.96	14.31	21.70	4.41	21.05	21.07	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.59	6.55	3.65	0.72	3.59	4.05	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

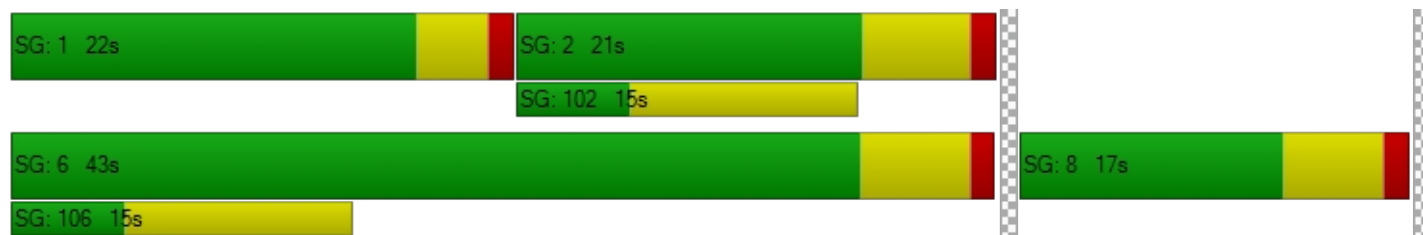
X, volume / capacity	0.66	0.70	0.78	0.47	0.79	0.80	
d, Delay for Lane Group [s/veh]	16.56	20.86	25.35	5.13	24.64	25.13	
Lane Group LOS	B	C	C	A	C	C	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	4.37	5.06	3.69	1.67	4.01	3.70	
50th-Percentile Queue Length [ft]	109.15	126.50	92.31	41.64	100.36	92.41	
95th-Percentile Queue Length [veh]	7.79	8.75	6.65	3.00	7.23	6.65	
95th-Percentile Queue Length [ft]	194.82	218.72	166.16	74.95	180.64	166.34	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	16.56	20.86	25.35	5.13	0.00	24.70	25.13	25.13	0.00	0.00	0.00
Movement LOS		B	C	C	A		C	C	C			
d_A, Approach Delay [s/veh]	17.98			9.57			24.87			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	15.88											
Intersection LOS	B											
Intersection V/C	0.675											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	160	807	0	0	922	680	0	0	0	205	2	306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	35	45	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	852	0	0	936	680	0	0	0	205	2	306
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	213	0	0	234	170	0	0	0	51	1	77
Total Analysis Volume [veh/h]	195	852	0	0	936	680	0	0	0	205	2	306
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	11	44	0	0	33	0	0	0	0	0	16	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	9	42	31	31		14	14
g / C, Green / Cycle	0.15	0.70	0.52	0.52		0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.12	0.27	0.29	0.48		0.13	0.21
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	239	2234	1649	736		373	333
d1, Uniform Delay [s]	24.69	3.68	9.92	13.41		20.26	22.46
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	6.60	0.50	1.42	19.03		1.29	10.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.38	0.57	0.92		0.56	0.92
d, Delay for Lane Group [s/veh]	31.29	4.18	11.34	32.43		21.55	32.91
Lane Group LOS	C	A	B	C		C	C
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	2.79	0.99	3.30	9.73		2.38	4.64
50th-Percentile Queue Length [ft]	69.84	24.69	82.48	243.29		59.48	116.11
95th-Percentile Queue Length [veh]	5.03	1.78	5.94	14.85		4.28	8.18
95th-Percentile Queue Length [ft]	125.72	44.44	148.46	371.20		107.06	204.47

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.29	4.18	0.00	0.00	11.34	32.43	0.00	0.00	0.00	21.55	21.55	32.91
Movement LOS	C	A			B	C				C	C	C
d_A, Approach Delay [s/veh]	9.23		20.21			0.00			28.33			
Approach LOS	A		C			A			C			
d_I, Intersection Delay [s/veh]	17.90											
Intersection LOS	B											
Intersection V/C	0.814											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	23.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑			← ↑			↑ ↑					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	581	251	416	709	0	380	1	226	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	80	0	0	14	0	0	0	12	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	661	251	416	723	0	380	1	238	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	165	63	104	181	0	95	0	60	0	0	0
Total Analysis Volume [veh/h]	0	661	251	416	723	0	380	1	238	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	18	39	0	0	21	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	20	20	16	38	18	18	
g / C, Green / Cycle	0.33	0.33	0.27	0.63	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.27	0.29	0.26	0.23	0.24	0.17	
s, saturation flow rate [veh/h]	1676	1589	1597	3192	1597	1425	
c, Capacity [veh/h]	557	528	426	2018	481	429	
d1, Uniform Delay [s]	18.37	18.75	21.82	5.24	19.25	17.60	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	12.61	16.89	15.53	0.50	3.00	1.12	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

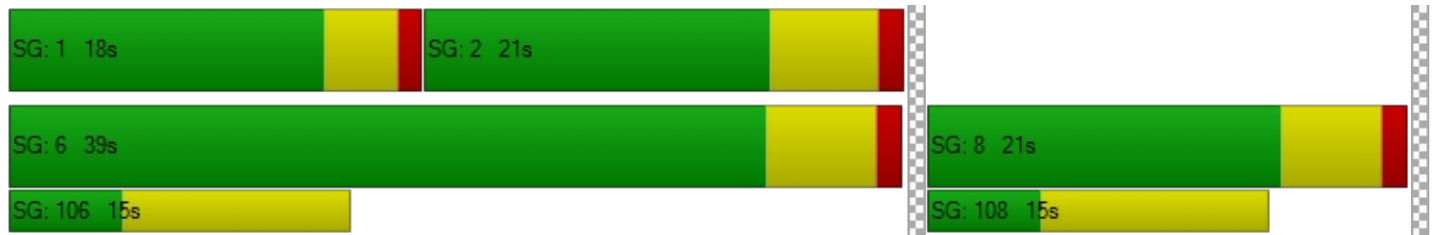
X, volume / capacity	0.82	0.86	0.98	0.36	0.79	0.55	
d, Delay for Lane Group [s/veh]	30.98	35.65	37.35	5.74	22.25	18.72	
Lane Group LOS	C	D	D	A	C	B	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	6.81	7.44	6.71	1.32	4.57	2.52	
50th-Percentile Queue Length [ft]	170.37	186.07	167.68	33.11	114.33	62.92	
95th-Percentile Queue Length [veh]	11.10	11.92	10.95	2.38	8.08	4.53	
95th-Percentile Queue Length [ft]	277.39	297.93	273.86	59.60	202.01	113.25	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	32.43	35.65	37.35	5.74	0.00	22.25	22.25	18.72	0.00	0.00	0.00
Movement LOS		C	D	D	A		C	C	B			
d_A, Approach Delay [s/veh]	33.31			17.28			20.89			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	23.60											
Intersection LOS	C											
Intersection V/C	0.786											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	322	456	0	0	993	339	0	0	0	304	5	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	35	0	0	11	0	0	0	0	27	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	3	0	0	0	0	15	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	322	493	0	0	1007	339	0	0	0	346	5	150
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	123	0	0	252	85	0	0	0	87	1	38
Total Analysis Volume [veh/h]	322	493	0	0	1007	339	0	0	0	346	5	150
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	17	42	0	0	25	0	0	0	0	0	18	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	15	40	23	23		16	16
g / C, Green / Cycle	0.24	0.67	0.39	0.39		0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.20	0.11	0.28	0.30		0.22	0.11
s, saturation flow rate [veh/h]	1597	4567	3192	1479		1598	1425
c, Capacity [veh/h]	391	3044	1240	575		426	380
d1, Uniform Delay [s]	21.43	3.74	15.60	16.10		20.68	18.03
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	4.40	0.11	3.69	10.11		4.06	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	0.16	0.72	0.78		0.82	0.39
d, Delay for Lane Group [s/veh]	25.84	3.85	19.29	26.22		24.74	18.70
Lane Group LOS	C	A	B	C		C	B
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh]	4.21	0.44	4.91	6.02		4.48	1.56
50th-Percentile Queue Length [ft]	105.31	11.02	122.69	150.56		111.92	38.99
95th-Percentile Queue Length [veh]	7.58	0.79	8.54	10.05		7.95	2.81
95th-Percentile Queue Length [ft]	189.46	19.83	213.51	251.18		198.68	70.19

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	25.84	3.85	0.00	0.00	20.05	26.22	0.00	0.00	0.00	24.74	24.74	18.70
Movement LOS	C	A			C	C				C	C	B
d_A, Approach Delay [s/veh]	12.54			21.60			0.00			22.93		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	19.08											
Intersection LOS	B											
Intersection V/C	0.725											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.854

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	712	396	306	985	0	79	1	450	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	35	86	0	38	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	12	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	749	494	306	1041	0	79	1	450	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	187	124	77	260	0	20	0	113	0	0	0
Total Analysis Volume [veh/h]	0	749	494	306	1041	0	79	1	450	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	25	0	14	39	0	0	21	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	23	23	12	37	19	19	
g / C, Green / Cycle	0.38	0.38	0.20	0.62	0.32	0.32	
(v / s)_i Volume / Saturation Flow Rate	0.23	0.35	0.19	0.23	0.05	0.32	
s, saturation flow rate [veh/h]	3192	1425	1597	4567	1598	1425	
c, Capacity [veh/h]	1224	546	319	2816	506	451	
d1, Uniform Delay [s]	14.91	17.46	23.75	5.71	14.75	20.47	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.18	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.29	20.95	15.38	0.37	0.14	24.79	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.61	0.90	0.96	0.37	0.16	1.00	
d, Delay for Lane Group [s/veh]	17.20	38.42	39.13	6.08	14.89	45.26	
Lane Group LOS	B	D	D	A	B	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	3.79	8.43	5.15	1.47	0.70	8.40	
50th-Percentile Queue Length [ft]	94.63	210.68	128.69	36.72	17.46	210.05	
95th-Percentile Queue Length [veh]	6.81	13.19	8.87	2.64	1.26	13.16	
95th-Percentile Queue Length [ft]	170.34	329.70	221.71	66.10	31.42	328.90	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	17.20	38.42	39.13	6.08	0.00	14.89	14.89	45.26	0.00	0.00	0.00
Movement LOS		B	D	D	A		B	B	D			
d_A, Approach Delay [s/veh]	25.63			13.59			40.68			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	22.99											
Intersection LOS	C											
Intersection V/C	0.854											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.525

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TTT			TTTTT			TTT			TTT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	118	995	63	276	805	145	115	335	132	87	262	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	27	0	0	8	0	0	0	1	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	1041	63	276	836	145	115	335	133	87	262	146
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	260	16	69	209	36	29	84	33	22	66	37
Total Analysis Volume [veh/h]	120	1041	63	276	836	145	115	335	133	87	262	146
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	29	0	10	21	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	27	27	8	28	28	19	19	19	19	19	19
g / C, Green / Cycle	0.12	0.45	0.45	0.13	0.46	0.46	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.26	0.10	0.21	0.11	0.15	0.16	0.17	0.12	0.14	0.15
s, saturation flow rate [veh/h]	1416	2831	1444	2750	4050	1264	777	1487	1346	735	1487	1313
c, Capacity [veh/h]	179	1274	650	367	1852	578	261	471	426	241	471	416
d1, Uniform Delay [s]	25.03	12.23	12.24	25.05	11.14	9.98	23.56	16.76	16.81	23.77	16.36	16.44
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.33	1.88	3.66	3.14	0.80	1.04	1.16	0.88	1.01	0.91	0.68	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

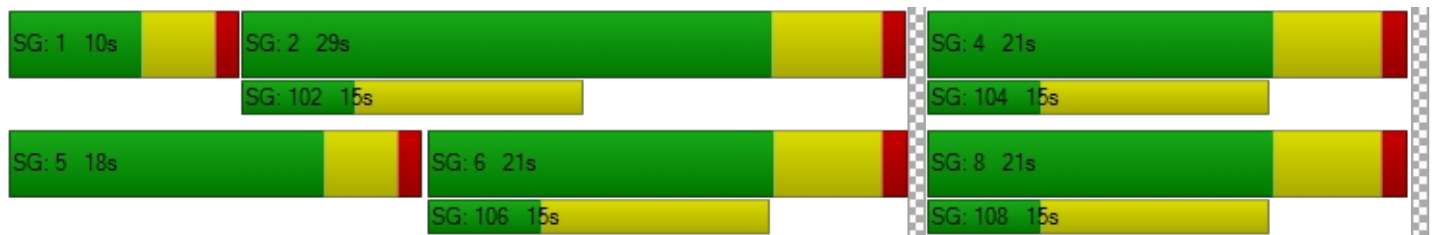
X, volume / capacity	0.67	0.57	0.57	0.75	0.45	0.25	0.44	0.52	0.53	0.36	0.45	0.47
d, Delay for Lane Group [s/veh]	29.37	14.12	15.90	28.19	11.93	11.02	24.72	17.64	17.81	24.68	17.05	17.26
Lane Group LOS	C	B	B	C	B	B	C	B	B	C	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.69	3.20	3.59	1.86	2.13	1.10	1.47	2.46	2.28	1.11	2.10	1.93
50th-Percentile Queue Length [ft]	42.26	80.12	89.84	46.59	53.30	27.44	36.85	61.60	57.11	27.66	52.49	48.24
95th-Percentile Queue Length [veh]	3.04	5.77	6.47	3.35	3.84	1.98	2.65	4.44	4.11	1.99	3.78	3.47
95th-Percentile Queue Length [ft]	76.07	144.22	161.71	83.86	95.93	49.39	66.32	110.88	102.80	49.78	94.49	86.84

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.37	14.65	15.90	28.19	11.93	11.02	24.72	17.69	17.81	24.68	17.08	17.26
Movement LOS	C	B	B	C	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	16.16			15.40			19.10			18.47		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.69											
Intersection LOS	B											
Intersection V/C	0.525											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.464

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	63	506	34	179	495	141	128	257	52	19	153	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	80	2	0	26	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	586	36	179	521	141	128	257	52	20	153	112
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	147	9	45	130	35	32	64	13	5	38	28
Total Analysis Volume [veh/h]	65	586	36	179	521	141	128	257	52	20	153	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	13	24	0	15	26	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	2.2	3.8	0.0	2.2	3.8	0.0	2.2	3.8	0.0	2.2	3.8	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	3.20	4.80	4.80	3.20	4.80	4.80	3.20	4.80	4.80	4.80	4.80	4.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	3.80	3.80	2.20	3.80	3.80	2.20	3.80	3.80	0.00	3.80	3.80
g_i, Effective Green Time [s]	5	29	29	9	34	34	7	13	13	19	8	8
g / C, Green / Cycle	0.07	0.42	0.42	0.13	0.48	0.48	0.10	0.18	0.18	0.27	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.04	0.18	0.18	0.11	0.20	0.20	0.08	0.09	0.10	0.02	0.08	0.09
s, saturation flow rate [veh/h]	1597	1676	1709	1597	1676	1620	1597	1676	1581	1125	1676	1452
c, Capacity [veh/h]	105	696	709	214	810	783	161	309	291	350	203	176
d1, Uniform Delay [s]	31.83	14.67	14.68	29.55	11.70	11.70	30.75	25.72	25.77	19.98	29.44	29.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.74	2.04	2.00	8.28	1.57	1.63	8.47	1.31	1.44	0.07	3.90	5.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

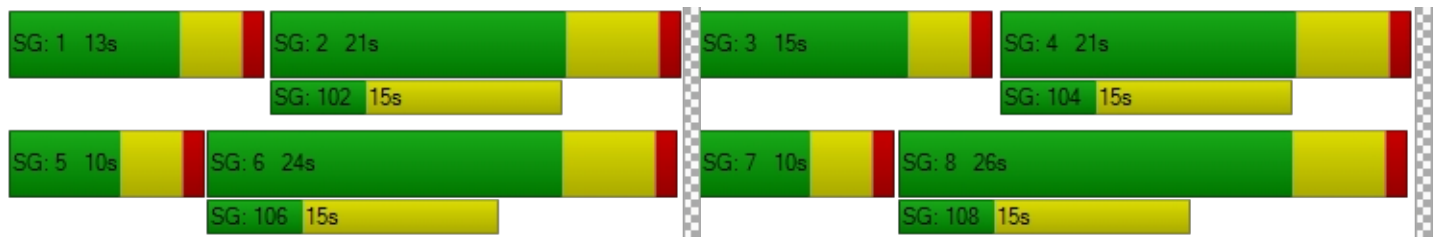
X, volume / capacity	0.62	0.44	0.44	0.84	0.42	0.42	0.79	0.51	0.52	0.06	0.68	0.73
d, Delay for Lane Group [s/veh]	37.57	16.71	16.68	37.83	13.27	13.33	39.22	27.03	27.21	20.04	33.34	35.21
Lane Group LOS	D	B	B	D	B	B	D	C	C	C	C	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.16	3.33	3.40	3.17	3.07	2.99	2.35	2.29	2.21	0.23	2.28	2.20
50th-Percentile Queue Length [ft]	28.94	83.28	84.90	79.20	76.86	74.68	58.72	57.36	55.35	5.83	57.00	54.92
95th-Percentile Queue Length [veh]	2.08	6.00	6.11	5.70	5.53	5.38	4.23	4.13	3.98	0.42	4.10	3.95
95th-Percentile Queue Length [ft]	52.08	149.91	152.81	142.57	138.34	134.42	105.69	103.25	99.62	10.49	102.60	98.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.57	16.70	16.68	37.83	13.29	13.33	39.22	27.10	27.21	20.04	33.53	35.21
Movement LOS	D	B	B	D	B	B	D	C	C	C	C	D
d_A, Approach Delay [s/veh]	18.67			18.52			30.66			33.25		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	22.79											
Intersection LOS	C											
Intersection V/C	0.464											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	8.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.336

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	65	736	43	138	1073	14	18	7	32	23	12	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	121	3	0	38	0	0	0	1	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	14	0	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	871	46	138	1129	14	18	7	33	24	12	74
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	218	12	35	282	4	5	2	8	6	3	19
Total Analysis Volume [veh/h]	67	871	46	138	1129	14	18	7	33	24	12	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	19	30	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	40	40	8	42	42	6	6	6	6
g / C, Green / Cycle	0.09	0.66	0.66	0.13	0.70	0.70	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.04	0.19	0.19	0.09	0.24	0.24	0.02	0.03	0.02	0.06
s, saturation flow rate [veh/h]	1597	3192	1634	1597	3192	1666	1175	1522	1225	1455
c, Capacity [veh/h]	149	2116	1083	206	2230	1164	169	165	209	157
d1, Uniform Delay [s]	25.76	4.21	4.21	24.91	3.56	3.56	27.99	24.50	26.31	25.36
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.13	0.34	0.67	3.74	0.41	0.78	0.27	0.76	0.24	2.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

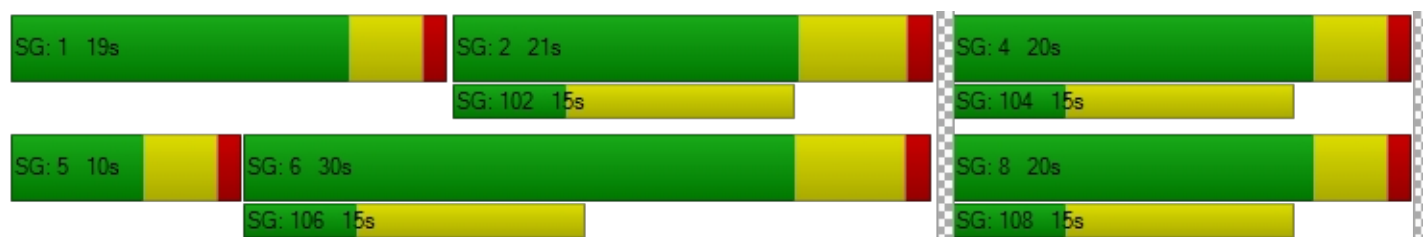
X, volume / capacity	0.45	0.29	0.29	0.67	0.34	0.34	0.11	0.24	0.11	0.55
d, Delay for Lane Group [s/veh]	27.89	4.55	4.88	28.65	3.97	4.34	28.26	25.26	26.56	28.29
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.91	0.95	1.07	1.90	0.95	1.11	0.24	0.51	0.31	1.18
50th-Percentile Queue Length [ft]	22.80	23.67	26.77	47.59	23.64	27.70	6.10	12.71	7.77	29.57
95th-Percentile Queue Length [veh]	1.64	1.70	1.93	3.43	1.70	1.99	0.44	0.92	0.56	2.13
95th-Percentile Queue Length [ft]	41.04	42.61	48.18	85.66	42.55	49.86	10.99	22.89	13.99	53.23

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.89	4.65	4.88	28.65	4.09	4.34	28.26	25.26	25.26	26.56	28.29	28.29
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	6.24			6.74			26.19			27.91		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.96											
Intersection LOS	A											
Intersection V/C	0.336											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	22.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.658

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	67	832	259	118	717	133	118	395	45	200	459	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	26	0	0	8	0	0	0	1	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	877	259	118	748	133	118	395	46	200	459	82
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	219	65	30	187	33	30	99	12	50	115	21
Total Analysis Volume [veh/h]	69	877	259	118	748	133	118	395	46	200	459	82
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	15	26	13	13	21	0	13	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	25	25	7	26	35	7	19	11	23	23
g / C, Green / Cycle	0.08	0.35	0.35	0.10	0.37	0.51	0.10	0.28	0.15	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.16	0.07	0.21	0.08	0.07	0.23	0.11	0.15	0.15
s, saturation flow rate [veh/h]	1774	3547	1583	1774	3547	1583	1774	1902	1774	1863	1838
c, Capacity [veh/h]	151	1253	559	186	1322	753	187	526	268	600	593
d1, Uniform Delay [s]	30.48	19.45	17.51	30.05	17.45	10.52	30.00	23.85	28.41	18.82	18.83
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.15	3.28	2.75	3.56	1.76	0.11	3.48	3.84	4.09	0.53	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.46	0.70	0.46	0.63	0.57	0.18	0.63	0.84	0.74	0.45	0.45
d, Delay for Lane Group [s/veh]	32.63	22.73	20.25	33.61	19.20	10.63	33.49	27.70	32.50	19.36	19.37
Lane Group LOS	C	C	C	C	B	B	C	C	C	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.13	5.95	3.28	1.96	4.52	1.02	1.96	6.72	3.27	3.22	3.19
50th-Percentile Queue Length [ft]	28.21	148.63	82.09	49.12	112.99	25.53	48.98	167.94	81.81	80.39	79.64
95th-Percentile Queue Length [veh]	2.03	9.94	5.91	3.54	8.01	1.84	3.53	10.97	5.89	5.79	5.73
95th-Percentile Queue Length [ft]	50.77	248.60	147.77	88.41	200.15	45.95	88.17	274.20	147.26	144.69	143.35

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.63	22.73	20.25	33.61	19.20	10.63	33.49	27.70	27.70	32.50	19.36	19.37
Movement LOS	C	C	C	C	B	B	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	22.76			19.76			28.92			22.91		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	22.92											
Intersection LOS	C											
Intersection V/C	0.658											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.314

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵↶			↵			↵↶		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	14	287	0	0	212	156	146	0	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	83	2	0	27	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	370	2	0	239	156	146	0	17	1	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	93	1	0	60	39	37	0	4	0	0	0
Total Analysis Volume [veh/h]	16	370	2	0	239	156	146	0	17	1	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	21	0	18	29	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	17	17	17	17	17	8	34	2	29	29
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.14	0.57	0.04	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.00	0.14	0.11	0.09	0.01	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1023	1675	906	1676	1425	1597	1425	1597	1676	1676
c, Capacity [veh/h]	278	481	183	481	409	218	815	65	798	798
d1, Uniform Delay [s]	21.80	19.60	0.00	17.78	17.12	24.61	5.57	27.61	0.00	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.09	2.69	0.00	0.79	0.58	3.51	0.05	0.09	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.06	0.77	0.00	0.50	0.38	0.67	0.02	0.02	0.00	0.00
d, Delay for Lane Group [s/veh]	21.88	22.29	0.00	18.57	17.70	28.12	5.61	27.70	0.00	0.00
Lane Group LOS	C	C	A	B	B	C	A	C	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	0.18	4.45	0.00	2.49	1.56	1.99	0.08	0.01	0.00	0.00
50th-Percentile Queue Length [ft]	4.54	111.15	0.00	62.20	39.08	49.81	1.89	0.36	0.00	0.00
95th-Percentile Queue Length [veh]	0.33	7.90	0.00	4.48	2.81	3.59	0.14	0.03	0.00	0.00
95th-Percentile Queue Length [ft]	8.17	197.60	0.00	111.96	70.35	89.66	3.40	0.65	0.00	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	21.88	22.29	22.29	0.00	18.57	17.70	28.12	5.61	5.61	27.70	0.00	0.00
Movement LOS	C	C	C	A	B	B	C	A	A	C	A	A
d_A, Approach Delay [s/veh]	22.27			18.23			25.77			27.70		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	21.19											
Intersection LOS	C											
Intersection V/C	0.314											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.400

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑↑↑			↵ ↑↑↑			↵ ↑↑			↵ ↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	460	78	254	632	0	0	0	0	146	0	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	127	8	0	39	0	0	0	1	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	14	0	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	601	86	254	689	0	0	0	1	150	0	102
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	150	22	64	172	0	0	0	0	38	0	26
Total Analysis Volume [veh/h]	2	601	86	254	689	0	0	0	1	150	0	102
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	22	0	16	22	0	10	21	0	11	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	35	35	14	46	46	2	4	4	9	11	11
g / C, Green / Cycle	0.04	0.50	0.50	0.20	0.66	0.66	0.03	0.06	0.06	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.00	0.14	0.15	0.16	0.14	0.14	0.00	0.00	0.00	0.09	0.00	0.07
s, saturation flow rate [veh/h]	1597	3192	1572	1597	3192	1676	1597	1676	1482	1597	1676	1425
c, Capacity [veh/h]	65	1598	787	319	2107	1107	51	95	84	205	257	218
d1, Uniform Delay [s]	32.26	10.19	10.22	26.64	4.71	4.71	0.00	0.00	31.18	29.33	0.00	27.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.45	0.94	4.51	0.23	0.44	0.00	0.00	0.06	4.94	0.00	1.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.03	0.29	0.29	0.80	0.21	0.21	0.00	0.00	0.01	0.73	0.00	0.47
d, Delay for Lane Group [s/veh]	32.46	10.64	11.16	31.15	4.94	5.15	0.00	0.00	31.23	34.27	0.00	28.57
Lane Group LOS	C	B	B	C	A	A	A	A	C	C	A	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.03	1.80	1.91	4.09	0.92	1.04	0.00	0.00	0.02	2.53	0.00	1.54
50th-Percentile Queue Length [ft]	0.85	45.00	47.85	102.27	23.12	25.91	0.00	0.00	0.41	63.36	0.00	38.41
95th-Percentile Queue Length [veh]	0.06	3.24	3.45	7.36	1.66	1.87	0.00	0.00	0.03	4.56	0.00	2.77
95th-Percentile Queue Length [ft]	1.54	81.00	86.14	184.09	41.62	46.63	0.00	0.00	0.73	114.04	0.00	69.15

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.46	10.76	11.16	31.15	5.01	5.15	0.00	15.62	31.23	34.27	14.29	28.57
Movement LOS	C	B	B	C	A	A	A	B	C	C	B	C
d_A, Approach Delay [s/veh]	10.87			12.05			31.23			31.97		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	14.30											
Intersection LOS	B											
Intersection V/C	0.400											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.531

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	45	1118	172	18	817	63	59	204	46	71	82	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	26	0	0	8	0	0	0	1	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	1163	172	18	848	63	59	204	47	71	82	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	291	43	5	212	16	15	51	12	18	21	3
Total Analysis Volume [veh/h]	47	1163	172	18	848	63	59	204	47	71	82	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	18	29	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	32	32	4	30	30	19	19	19	19
g / C, Green / Cycle	0.08	0.53	0.53	0.06	0.50	0.50	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.03	0.36	0.12	0.01	0.27	0.04	0.05	0.12	0.03	0.16
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1167	1676	1425	1060
c, Capacity [veh/h]	131	1682	751	94	1607	717	256	527	448	419
d1, Uniform Delay [s]	26.05	10.57	7.64	26.89	10.07	7.74	24.68	16.05	14.58	17.38
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.65	2.36	0.71	0.98	1.24	0.24	0.46	0.46	0.10	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

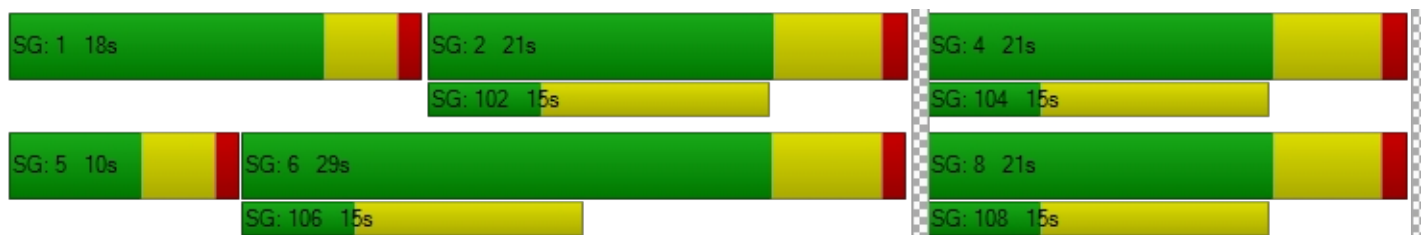
X, volume / capacity	0.36	0.69	0.23	0.19	0.53	0.09	0.23	0.39	0.10	0.39
d, Delay for Lane Group [s/veh]	27.70	12.93	8.35	27.87	11.32	7.98	25.13	16.51	14.68	17.98
Lane Group LOS	C	B	A	C	B	A	C	B	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.64	4.73	1.04	0.25	3.14	0.37	0.74	1.94	0.40	1.79
50th-Percentile Queue Length [ft]	15.99	118.15	26.02	6.26	78.47	9.37	18.48	48.55	10.12	44.71
95th-Percentile Queue Length [veh]	1.15	8.29	1.87	0.45	5.65	0.67	1.33	3.50	0.73	3.22
95th-Percentile Queue Length [ft]	28.77	207.28	46.84	11.27	141.25	16.86	33.26	87.40	18.22	80.47

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.70	12.93	8.35	27.87	11.32	7.98	25.13	16.51	14.68	17.98	17.98	17.98
Movement LOS	C	B	A	C	B	A	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	12.86			11.41			17.88			17.98		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.24											
Intersection LOS	B											
Intersection V/C	0.531											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type:	All-way stop	Delay (sec / veh):	16.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.714

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	23	343	25	17	228	15	81	136	26	9	25	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	88	0	0	28	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	431	25	17	256	15	81	136	26	9	25	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	108	6	4	64	4	20	34	7	2	6	5
Total Analysis Volume [veh/h]	25	431	25	17	256	15	81	136	26	9	25	19
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	673	639	589	558
Degree of Utilization, x	0.71	0.45	0.41	0.09

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	6.00	2.34	2.02	0.31
95th-Percentile Queue Length [ft]	150.11	58.43	50.42	7.83
Approach Delay [s/veh]	20.56	13.17	13.36	10.13
Approach LOS	C	B	B	B
Intersection Delay [s/veh]	16.40			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	8.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.322

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	220.00	100.00	970.00	200.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	2	657	43	82	860	4	10	7	6	44	3	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	137	7	0	44	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	14	0	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	808	50	82	922	4	10	7	6	45	3	55
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	202	13	21	231	1	3	2	2	11	1	14
Total Analysis Volume [veh/h]	2	808	50	82	922	4	10	7	6	45	3	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	17	29	0	10	11	0	20	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	45	45	7	49	49	3	5	5	7	7
g / C, Green / Cycle	0.04	0.64	0.64	0.09	0.70	0.70	0.04	0.07	0.07	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.00	0.18	0.18	0.05	0.28	0.28	0.01	0.01	0.03	0.00	0.04
s, saturation flow rate [veh/h]	1597	3192	1627	1597	1676	1674	1597	1612	1597	1676	1425
c, Capacity [veh/h]	65	2050	1045	152	1168	1166	71	119	119	174	148
d1, Uniform Delay [s]	32.27	5.45	5.46	30.22	4.45	4.45	32.15	30.26	30.85	28.15	29.23
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.34	0.66	2.97	1.01	1.01	0.89	0.40	1.97	0.04	1.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

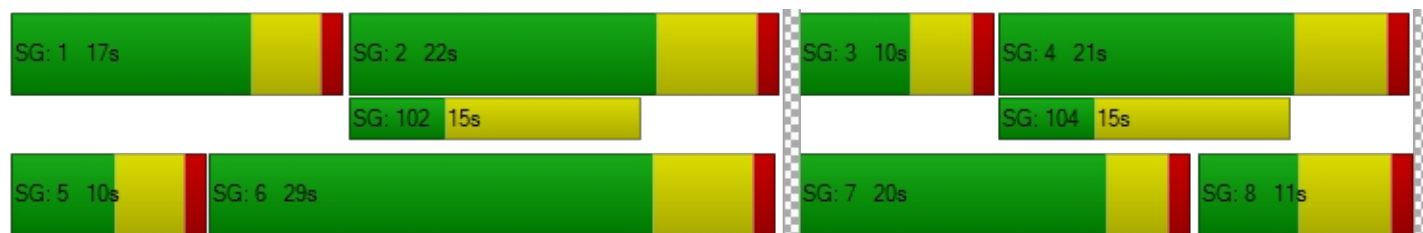
X, volume / capacity	0.03	0.28	0.28	0.54	0.40	0.40	0.14	0.11	0.38	0.02	0.37
d, Delay for Lane Group [s/veh]	32.46	5.79	6.12	33.19	5.46	5.46	33.04	30.65	32.82	28.19	30.78
Lane Group LOS	C	A	A	C	A	A	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.03	1.33	1.46	1.36	1.95	1.95	0.17	0.21	0.74	0.04	0.87
50th-Percentile Queue Length [ft]	0.85	33.37	36.59	33.97	48.77	48.70	4.28	5.14	18.62	1.11	21.75
95th-Percentile Queue Length [veh]	0.06	2.40	2.63	2.45	3.51	3.51	0.31	0.37	1.34	0.08	1.57
95th-Percentile Queue Length [ft]	1.54	60.07	65.85	61.14	87.78	87.67	7.70	9.25	33.51	1.99	39.15

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.46	5.88	6.12	33.19	5.46	5.46	33.04	30.65	30.65	32.82	28.19	30.78
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	5.96			7.71			31.69			31.59		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.47											
Intersection LOS	A											
Intersection V/C	0.322											

**Sequence**





Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	185.00	100.00	50.00	165.00	100.00	165.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	84	1062	18	11	837	88	284	220	142	16	37	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	27	0	0	8	0	0	0	1	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	1108	18	11	868	88	284	220	143	16	37	6
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	277	5	3	217	22	71	55	36	4	9	2
Total Analysis Volume [veh/h]	86	1108	18	11	868	88	284	220	143	16	37	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	22	0	10	21	0	17	28	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	37	37	3	34	34	15	18	18	4	7
g / C, Green / Cycle	0.09	0.53	0.53	0.05	0.49	0.49	0.21	0.26	0.26	0.05	0.10
(v / s)_i Volume / Saturation Flow Rate	0.05	0.35	0.01	0.01	0.27	0.06	0.18	0.13	0.10	0.01	0.03
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1482	1597	1636
c, Capacity [veh/h]	143	1690	755	73	1550	692	342	435	384	81	157
d1, Uniform Delay [s]	30.65	11.86	7.84	32.09	12.72	9.87	26.28	22.10	21.25	31.84	29.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.99	2.00	0.06	0.94	1.47	0.38	5.20	0.91	0.60	1.16	0.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

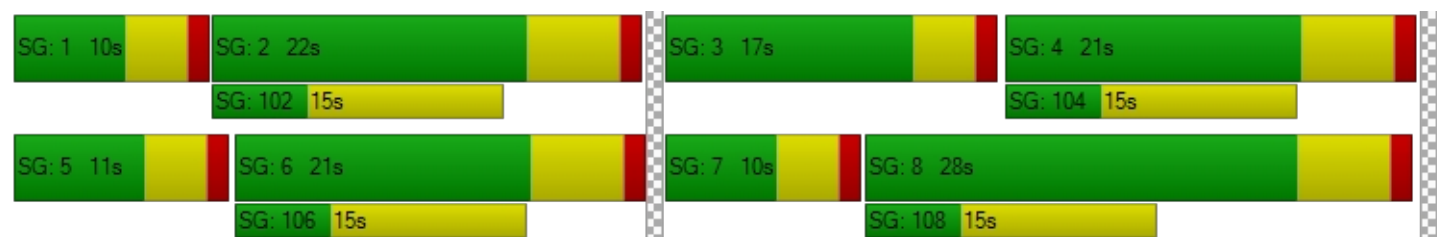
X, volume / capacity	0.60	0.66	0.02	0.15	0.56	0.13	0.83	0.51	0.37	0.20	0.27
d, Delay for Lane Group [s/veh]	34.64	13.86	7.90	33.04	14.19	10.25	31.48	23.01	21.85	33.00	30.29
Lane Group LOS	C	B	A	C	B	B	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.46	5.38	0.12	0.19	4.28	0.70	4.62	2.91	1.82	0.27	0.67
50th-Percentile Queue Length [ft]	36.61	134.59	2.94	4.69	106.99	17.41	115.47	72.84	45.40	6.77	16.75
95th-Percentile Queue Length [veh]	2.64	9.19	0.21	0.34	7.67	1.25	8.14	5.24	3.27	0.49	1.21
95th-Percentile Queue Length [ft]	65.89	229.71	5.30	8.45	191.80	31.34	203.58	131.12	81.73	12.18	30.14

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.64	13.86	7.90	33.04	14.19	10.25	31.48	23.01	21.85	33.00	30.29	30.29
Movement LOS	C	B	A	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	15.25			14.05			26.47			31.03		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.69											
Intersection LOS	B											
Intersection V/C	0.558											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type: All-way stop  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 13.1  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.539

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	17	241	9	20	200	34	105	64	44	9	18	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	90	0	0	29	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	331	9	20	229	34	105	64	44	9	18	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	83	2	5	57	9	26	16	11	2	5	5
Total Analysis Volume [veh/h]	18	331	9	20	229	34	105	64	44	9	18	20
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	665	657	604	583
Degree of Utilization, x	0.54	0.43	0.35	0.08

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	3.23	2.17	1.59	0.26
95th-Percentile Queue Length [ft]	80.74	54.17	39.63	6.55
Approach Delay [s/veh]	14.56	12.55	12.19	9.71
Approach LOS	B	B	B	A
Intersection Delay [s/veh]	13.11			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	38.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.947

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	706	4	474	0	1366	521	225	1191	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	52	0	0	0	11	0	0	35	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	6	0	0	0	11	0	0	8	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	764	4	474	0	1388	521	225	1234	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	191	1	119	0	347	130	56	309	0	0	0	0
Total Analysis Volume [veh/h]	764	4	474	0	1388	521	225	1234	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	31	0	0	39	0	10	49	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	29	29	29	37	37	8	47
g / C, Green / Cycle	0.36	0.36	0.36	0.46	0.46	0.10	0.59
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.38	0.45	0.49	0.08	0.30
s, saturation flow rate [veh/h]	1416	1417	1264	2831	1299	2750	4050
c, Capacity [veh/h]	513	514	458	1309	601	275	2380
d1, Uniform Delay [s]	22.30	22.30	25.50	20.99	21.50	35.29	9.79
k, delay calibration	0.25	0.25	0.45	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.94	4.92	49.13	19.01	53.31	5.93	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

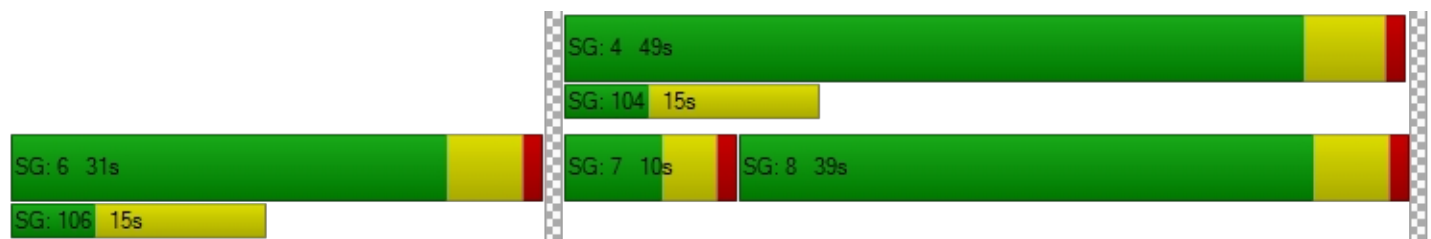
X, volume / capacity	0.75	0.75	1.03	0.97	1.06	0.82	0.52
d, Delay for Lane Group [s/veh]	27.24	27.22	74.63	40.00	74.81	41.22	10.60
Lane Group LOS	C	C	F	D	F	D	B
Critical Lane Group	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	6.41	6.41	14.04	13.41	18.52	2.27	3.63
50th-Percentile Queue Length [ft]	160.24	160.16	350.89	335.14	463.02	56.70	90.67
95th-Percentile Queue Length [veh]	10.56	10.56	20.63	19.41	26.66	4.08	6.53
95th-Percentile Queue Length [ft]	264.03	263.93	515.82	485.25	666.45	102.06	163.21

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.23	27.22	74.63	0.00	42.89	74.81	41.22	10.60	0.00	0.00	0.00	0.00
Movement LOS	C	C	F		D	E	D	B				
d_A, Approach Delay [s/veh]	45.32			51.60			15.32			0.00		
Approach LOS	D			D			B			A		
d_I, Intersection Delay [s/veh]	38.43											
Intersection LOS	D											
Intersection V/C	0.947											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	76.8
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.012

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave			Grand Ave		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave			Grand Ave		
Base Volume Input [veh/h]	372	108	189	83	0	423	295	1490	298	0	1372	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	64	0	0	203	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	372	108	189	83	0	423	295	1572	298	0	1589	36
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	27	47	21	0	106	74	393	75	0	397	9
Total Analysis Volume [veh/h]	372	108	189	83	0	423	295	1572	298	0	1589	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	16	0	12	12	33	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No			No	No			No	
Maximum Recall		No		No			No	No			No	
Pedestrian Recall		No		No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	16	16	16	17	17	10	31	19	19
g / C, Green / Cycle	0.23	0.23	0.23	0.24	0.24	0.14	0.44	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.17	0.17	0.15	0.06	0.33	0.21	0.39	0.30	0.28
s, saturation flow rate [veh/h]	1416	1447	1264	1416	1264	1416	4050	4050	1464
c, Capacity [veh/h]	325	332	290	342	306	206	1796	1092	395
d1, Uniform Delay [s]	24.99	24.98	24.45	21.37	26.54	29.92	17.73	25.57	25.57
k, delay calibration	0.11	0.11	0.11	0.11	0.29	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.20	3.10	2.48	0.36	184.38	201.44	6.33	65.14	53.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

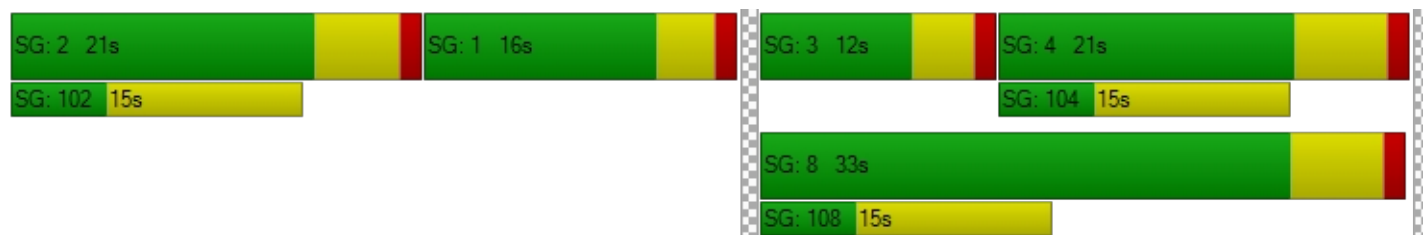
X, volume / capacity	0.73	0.73	0.65	0.24	1.38	1.43	0.88	1.12	1.03
d, Delay for Lane Group [s/veh]	28.19	28.08	26.94	21.74	210.91	231.36	24.06	90.70	78.69
Lane Group LOS	C	C	C	C	F	F	C	F	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	3.62	3.68	2.79	1.04	20.25	14.71	7.47	11.99	11.68
50th-Percentile Queue Length [ft]	90.44	91.88	69.72	25.99	506.20	367.77	186.69	299.73	292.09
95th-Percentile Queue Length [veh]	6.51	6.62	5.02	1.87	32.22	24.05	11.95	18.76	17.58
95th-Percentile Queue Length [ft]	162.80	165.38	125.50	46.79	805.50	601.15	298.73	469.02	439.60

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.15	28.08	26.94	21.74	0.00	210.91	231.36	24.06	0.00	0.00	87.90	78.69
Movement LOS	C	C	C	C		F	F	C			F	E
d_A, Approach Delay [s/veh]	27.80			179.88			56.81			87.70		
Approach LOS	C			F			E			F		
d_I, Intersection Delay [s/veh]	76.75											
Intersection LOS	E											
Intersection V/C	1.012											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	23.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TTT			TTT			TTT			TTT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	61	472	57	38	437	122	87	905	106	53	742	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	1	0	0	0	64	0	2	203	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	472	58	39	437	122	87	987	106	55	959	50
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	118	15	10	109	31	22	247	27	14	240	13
Total Analysis Volume [veh/h]	61	472	58	39	437	122	87	987	106	55	959	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	18	29	10	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	19	19	5	18	18	7	33	40	6	32	32
g / C, Green / Cycle	0.08	0.27	0.27	0.07	0.26	0.26	0.09	0.47	0.58	0.08	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.04	0.17	0.05	0.03	0.19	0.20	0.06	0.35	0.05	0.04	0.34	0.34
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1377	1416	2831	2237	1416	1487	1461
c, Capacity [veh/h]	116	764	341	99	384	356	134	1322	1221	112	671	660
d1, Uniform Delay [s]	30.85	22.40	19.57	31.12	23.90	23.96	30.59	15.26	7.58	30.89	16.00	16.01
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.70	0.82	0.23	2.51	2.99	3.36	5.26	3.88	0.03	3.33	7.83	7.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.53	0.62	0.17	0.39	0.75	0.76	0.65	0.75	0.09	0.49	0.76	0.76
d, Delay for Lane Group [s/veh]	34.56	23.22	19.80	33.63	26.89	27.32	35.84	19.14	7.61	34.22	23.83	23.97
Lane Group LOS	C	C	B	C	C	C	D	B	A	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.04	3.16	0.68	0.66	4.29	4.06	1.52	6.03	0.31	0.94	7.11	7.01
50th-Percentile Queue Length [ft]	26.12	79.07	17.06	16.52	107.23	101.51	37.99	150.70	7.77	23.43	177.81	175.37
95th-Percentile Queue Length [veh]	1.88	5.69	1.23	1.19	7.69	7.31	2.74	10.05	0.56	1.69	11.49	11.36
95th-Percentile Queue Length [ft]	47.02	142.32	30.70	29.74	192.14	182.71	68.38	251.36	13.98	42.18	287.15	283.96

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.56	23.22	19.80	33.63	27.03	27.32	35.84	19.14	7.61	34.22	23.90	23.97
Movement LOS	C	C	B	C	C	C	D	B	A	C	C	C
d_A, Approach Delay [s/veh]	24.06			27.52			19.34			24.43		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	23.15											
Intersection LOS	C											
Intersection V/C	0.643											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	70	844	366	81	708	152	242	680	103	241	454	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	1	0	0	0	67	0	3	211	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	844	367	82	708	152	242	765	103	244	679	73
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	211	92	21	177	38	61	191	26	61	170	18
Total Analysis Volume [veh/h]	70	844	367	82	708	152	242	765	103	244	679	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	23	0	10	23	0	15	27	0	10	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	23	23	6	23	23	13	25	25	8	20	20
g / C, Green / Cycle	0.08	0.33	0.33	0.09	0.33	0.33	0.19	0.36	0.36	0.12	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.05	0.30	0.29	0.06	0.25	0.12	0.17	0.30	0.30	0.09	0.24	0.06
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1426	2750	2831	1264
c, Capacity [veh/h]	120	918	410	125	929	415	269	527	505	326	801	358
d1, Uniform Delay [s]	30.84	22.77	22.52	30.86	21.07	17.96	27.70	20.78	20.79	29.84	23.68	19.10
k, delay calibration	0.11	0.11	0.21	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.43	4.31	12.67	5.65	1.33	0.54	10.50	14.92	15.52	3.44	10.81	1.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.58	0.92	0.90	0.65	0.76	0.37	0.90	0.84	0.84	0.75	0.85	0.20
d, Delay for Lane Group [s/veh]	35.27	27.08	35.19	36.51	22.40	18.50	38.20	35.71	36.31	33.29	34.49	20.39
Lane Group LOS	D	C	D	D	C	B	D	D	D	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.21	6.43	6.50	1.45	4.76	1.74	4.42	7.99	7.75	2.01	5.93	0.95
50th-Percentile Queue Length [ft]	30.31	160.84	162.60	36.23	118.90	43.52	110.40	199.71	193.78	50.19	148.32	23.71
95th-Percentile Queue Length [veh]	2.18	10.59	10.69	2.61	8.33	3.13	7.86	12.62	12.32	3.61	9.93	1.71
95th-Percentile Queue Length [ft]	54.56	264.84	267.17	65.21	208.32	78.33	196.56	315.59	307.93	90.33	248.18	42.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	35.27	27.08	35.19	36.51	22.40	18.50	38.20	35.96	36.31	33.29	34.49	20.39
Movement LOS	D	C	D	D	C	B	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	29.85			23.00			36.48			33.16		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	30.82											
Intersection LOS	C											
Intersection V/C	0.767											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.427

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	180.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	28	74	30	85	97	108	137	901	37	24	386	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	1	0	0	0	70	0	3	221	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	74	31	86	97	108	137	989	37	27	621	52
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	19	8	22	24	27	34	247	9	7	155	13
Total Analysis Volume [veh/h]	28	74	31	86	97	108	137	989	37	27	621	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	18	29	0	10	21	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	9	9	6	11	11	9	43	43	4	38	38
g / C, Green / Cycle	0.06	0.12	0.12	0.09	0.15	0.15	0.13	0.61	0.61	0.06	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.02	0.06	0.07	0.09	0.10	0.24	0.24	0.02	0.22	0.04
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1460	1416	2831	1264
c, Capacity [veh/h]	88	182	155	131	228	194	190	1726	890	86	1519	678
d1, Uniform Delay [s]	31.43	28.36	27.62	30.69	26.85	27.44	29.05	7.01	7.01	31.46	9.63	7.84
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.07	1.45	0.63	5.48	1.26	2.50	5.10	0.67	1.30	2.03	0.82	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.32	0.41	0.20	0.66	0.43	0.56	0.72	0.39	0.39	0.31	0.41	0.08
d, Delay for Lane Group [s/veh]	33.50	29.81	28.25	36.17	28.11	29.94	34.15	7.68	8.31	33.49	10.45	8.06
Lane Group LOS	C	C	C	D	C	C	C	A	A	C	B	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.48	1.14	0.46	1.51	1.44	1.69	2.32	2.04	2.26	0.46	2.42	0.35
50th-Percentile Queue Length [ft]	11.91	28.57	11.58	37.76	36.07	42.15	57.90	51.10	56.62	11.49	60.60	8.71
95th-Percentile Queue Length [veh]	0.86	2.06	0.83	2.72	2.60	3.03	4.17	3.68	4.08	0.83	4.36	0.63
95th-Percentile Queue Length [ft]	21.43	51.42	20.85	67.96	64.93	75.87	104.22	91.97	101.92	20.68	109.09	15.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.50	29.81	28.25	36.17	28.11	29.94	34.15	7.88	8.31	33.49	10.45	8.06
Movement LOS	C	C	C	D	C	C	C	A	A	C	B	A
d_A, Approach Delay [s/veh]	30.22			31.17			10.99			11.16		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	14.73											
Intersection LOS	B											
Intersection V/C	0.427											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	99	902	55	61	865	111	216	371	159	34	172	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	138	23	0	2	7	0	0	29	44	0	93	5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	14	19	0	0	23	0	0	0	18	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	251	944	55	63	895	111	216	400	221	34	265	41
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	236	14	16	224	28	54	100	55	9	66	10
Total Analysis Volume [veh/h]	251	944	55	63	895	111	216	400	221	34	265	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	14	23	0	13	22	0	0	24	0	0	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	12	26	26	6	20	20	22	22	22	22	22
g / C, Green / Cycle	0.20	0.44	0.44	0.09	0.33	0.33	0.37	0.37	0.37	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.16	0.30	0.04	0.04	0.28	0.08	0.22	0.24	0.16	0.04	0.19
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	962	1676	1425	883	1638
c, Capacity [veh/h]	319	1403	626	150	1064	475	317	615	523	254	601
d1, Uniform Delay [s]	22.78	13.38	9.80	25.65	18.53	14.46	24.39	15.80	14.24	22.46	14.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.28	2.59	0.28	1.88	8.05	1.15	2.57	1.17	0.54	0.24	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	0.67	0.09	0.42	0.84	0.23	0.68	0.65	0.42	0.13	0.51
d, Delay for Lane Group [s/veh]	27.06	15.97	10.08	27.53	26.58	15.61	26.96	16.97	14.79	22.70	15.47
Lane Group LOS	C	B	B	C	C	B	C	B	B	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	3.36	4.51	0.39	0.85	6.02	1.09	2.99	3.99	1.97	0.40	2.83
50th-Percentile Queue Length [ft]	83.92	112.79	9.75	21.28	150.60	27.19	74.70	99.79	49.17	9.97	70.70
95th-Percentile Queue Length [veh]	6.04	8.00	0.70	1.53	10.05	1.96	5.38	7.18	3.54	0.72	5.09
95th-Percentile Queue Length [ft]	151.06	199.88	17.55	38.31	251.23	48.95	134.46	179.62	88.51	17.94	127.26

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.06	15.97	10.08	27.53	26.58	15.61	26.96	16.97	14.79	22.70	15.47	15.47
Movement LOS	C	B	B	C	C	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	17.94			25.50			18.97			16.19		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	20.33											
Intersection LOS	C											
Intersection V/C	0.676											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	All-way stop	Delay (sec / veh):	60.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.098

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	12	177	52	61	173	33	48	401	17	28	189	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	98	90	0	0	29	0	0	0	31	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	14	0	2
Total Hourly Volume [veh/h]	110	267	52	61	202	33	48	401	48	42	189	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	67	13	15	51	8	12	100	12	11	47	5
Total Analysis Volume [veh/h]	110	267	52	61	202	33	48	401	48	42	189	19
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	455	427	497	415
Degree of Utilization, x	0.94	0.69	1.10	0.60

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	11.21	5.16	16.69	3.84
95th-Percentile Queue Length [ft]	280.23	129.04	417.24	95.98
Approach Delay [s/veh]	57.84	28.44	99.30	24.02
Approach LOS	F	D	F	C
Intersection Delay [s/veh]	60.18			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.499

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	500.00	100.00	280.00	320.00	100.00	75.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	40.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	43	544	164	36	812	52	97	314	115	256	145	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	144	117	0	45	0	0	0	0	37	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	14	12	0	18	0	0	0	0	17	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	702	293	36	875	52	97	314	115	310	145	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	176	73	9	219	13	24	79	29	78	36	9
Total Analysis Volume [veh/h]	43	702	293	36	875	52	97	314	115	310	145	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	22	12	15	27	0	10	21	10	12	23	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	35	35	5	35	35	6	12	20	10	15	15
g / C, Green / Cycle	0.08	0.50	0.50	0.07	0.49	0.49	0.09	0.17	0.28	0.14	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.03	0.22	0.21	0.02	0.27	0.04	0.03	0.10	0.08	0.10	0.09	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	3101	3192	1482	3101	1676	1425
c, Capacity [veh/h]	130	1597	713	120	1576	704	286	541	359	437	366	311
d1, Uniform Delay [s]	30.34	11.20	11.00	30.65	12.36	9.31	29.76	26.78	21.78	28.69	23.43	21.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.47	0.88	1.75	1.40	1.42	0.20	0.69	0.99	0.51	2.13	0.70	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

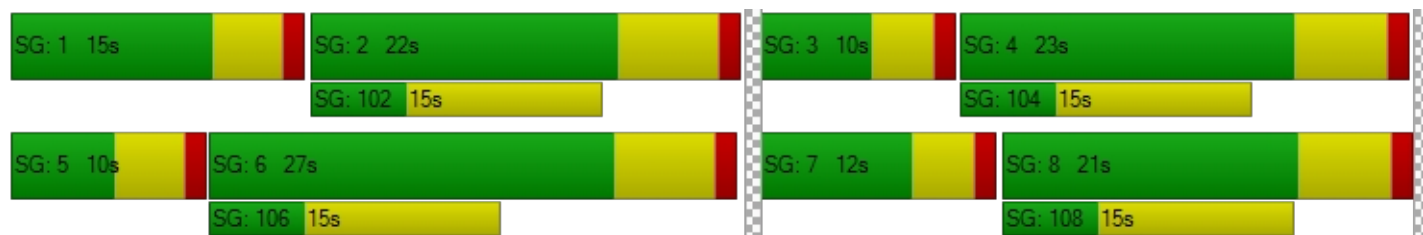
X, volume / capacity	0.33	0.44	0.41	0.30	0.56	0.07	0.34	0.58	0.32	0.71	0.40	0.11
d, Delay for Lane Group [s/veh]	31.81	12.08	12.74	32.04	13.77	9.51	30.46	27.78	22.29	30.82	24.12	22.10
Lane Group LOS	C	B	B	C	B	A	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.69	3.05	2.69	0.58	4.09	0.38	0.73	2.27	1.44	2.39	1.92	0.43
50th-Percentile Queue Length [ft]	17.37	76.31	67.21	14.46	102.18	9.45	18.32	56.69	36.11	59.79	47.98	10.79
95th-Percentile Queue Length [veh]	1.25	5.49	4.84	1.04	7.36	0.68	1.32	4.08	2.60	4.31	3.45	0.78
95th-Percentile Queue Length [ft]	31.27	137.36	120.98	26.02	183.93	17.02	32.98	102.04	65.00	107.63	86.37	19.42

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.81	12.08	12.74	32.04	13.77	9.51	30.46	27.78	22.29	30.82	24.12	22.10
Movement LOS	C	B	B	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	13.08			14.22			27.07			28.22		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.34											
Intersection LOS	B											
Intersection V/C	0.499											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	45.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐			⇐⇐			⇐⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	70	241	141	281	374	39	28	355	179	296	295	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	117	0	0	37	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	12	0	0	17	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	241	141	281	374	39	28	484	179	296	349	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	60	35	70	94	10	7	121	45	74	87	18
Total Analysis Volume [veh/h]	70	241	141	281	374	39	28	484	179	296	349	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	22	17	16	28	0	13	25	0	17	29	16
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	20	14	28	5	23	23	15	33	33
g / C, Green / Cycle	0.08	0.25	0.18	0.35	0.06	0.29	0.29	0.19	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.18	0.25	0.02	0.29	0.13	0.19	0.21	0.05
s, saturation flow rate [veh/h]	1597	1574	1597	1649	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	123	393	279	574	92	482	410	299	700	595
d1, Uniform Delay [s]	35.63	29.71	33.00	22.70	36.15	28.50	23.22	32.42	17.15	14.29
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.28	0.11	0.11	0.12	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.07	38.62	26.41	7.61	1.83	31.80	0.73	21.64	0.63	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

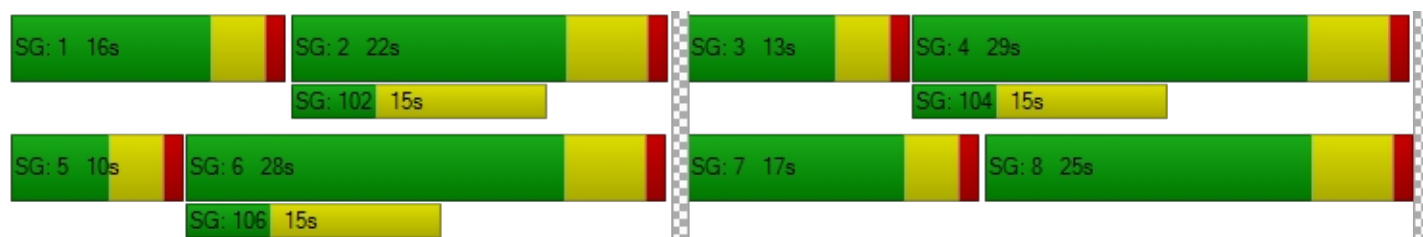
X, volume / capacity	0.57	0.97	1.01	0.72	0.30	1.00	0.44	0.99	0.50	0.12
d, Delay for Lane Group [s/veh]	39.69	68.33	59.41	30.31	37.98	60.30	23.96	54.06	17.79	14.38
Lane Group LOS	D	E	F	C	D	F	C	D	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.40	10.94	7.13	7.36	0.55	12.71	2.64	7.15	4.35	0.73
50th-Percentile Queue Length [ft]	34.91	273.60	178.21	183.92	13.72	317.76	66.04	178.69	108.83	18.30
95th-Percentile Queue Length [veh]	2.51	16.37	11.54	11.81	0.99	18.60	4.75	11.53	7.78	1.32
95th-Percentile Queue Length [ft]	62.84	409.24	288.44	295.13	24.70	465.11	118.87	288.31	194.38	32.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.69	68.33	68.33	59.41	30.31	30.31	37.98	60.30	23.96	54.06	17.79	14.38
Movement LOS	D	E	E	F	C	C	D	F	C	D	B	B
d_A, Approach Delay [s/veh]	63.89			42.09			49.98			32.44		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	45.38											
Intersection LOS	D											
Intersection V/C	0.893											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	12.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.522

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	←←←		↑↑↑		↑↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	318	500	0	495	198	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	34	0	117	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	15	0	12	2	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	549	0	624	203	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	137	0	156	51	0
Total Analysis Volume [veh/h]	318	549	0	624	203	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.4	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	49	0	0	11	11	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	R	C	C
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	27	27	29	29
g / C, Green / Cycle	0.46	0.46	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.10	0.39	0.14	0.06
s, saturation flow rate [veh/h]	3101	1425	4567	3192
c, Capacity [veh/h]	1421	653	2170	1517
d1, Uniform Delay [s]	9.81	14.33	9.57	8.83
k, delay calibration	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	3.16	0.33	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

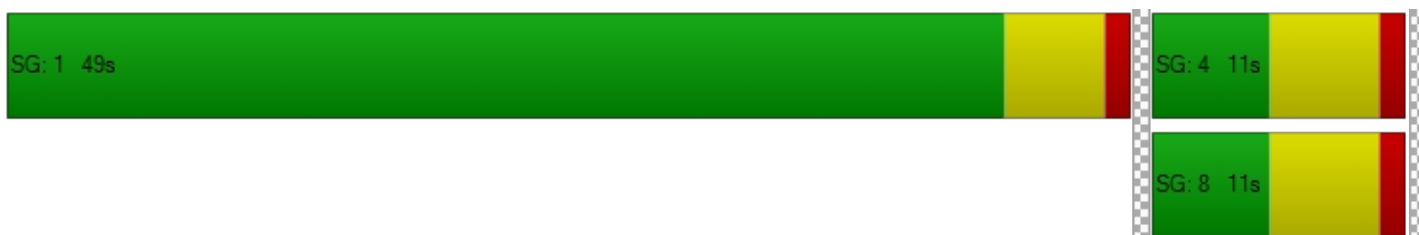
X, volume / capacity	0.22	0.84	0.29	0.13
d, Delay for Lane Group [s/veh]	9.89	17.49	9.91	9.01
Lane Group LOS	A	B	A	A
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	1.11	6.07	1.48	0.67
50th-Percentile Queue Length [ft]	27.64	151.70	36.96	16.84
95th-Percentile Queue Length [veh]	1.99	10.11	2.66	1.21
95th-Percentile Queue Length [ft]	49.75	252.70	66.53	30.31

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	9.89	17.49	0.00	9.91	9.01	0.00
Movement LOS	A	B		A	A	
d_A, Approach Delay [s/veh]	14.70		9.91		9.01	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	12.25					
Intersection LOS	B					
Intersection V/C	0.522					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	3.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.095

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	95	81	468	380	241	272
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	9	108	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	2	10	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	81	479	498	241	277
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	20	120	125	60	69
Total Analysis Volume [veh/h]	95	81	479	498	241	277
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	39	0	21	39	0	21
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	10	10	10	46	58	46	46
g / C, Green / Cycle	0.16	0.16	0.16	0.77	0.97	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.04	0.04	0.04	0.10	0.35	0.15	0.06
s, saturation flow rate [veh/h]	1597	1520	1425	4567	1425	1594	4567
c, Capacity [veh/h]	256	243	228	3531	1287	1270	3531
d1, Uniform Delay [s]	22.00	22.02	22.04	1.72	0.43	2.74	1.64
k, delay calibration	0.11	0.11	0.11	0.50	0.18	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.47	0.51	0.56	0.08	0.31	0.33	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.24	0.24	0.25	0.14	0.39	0.19	0.08
d, Delay for Lane Group [s/veh]	22.47	22.53	22.60	1.80	0.74	3.07	1.68
Lane Group LOS	C	C	C	A	A	A	A
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.74	0.72	0.69	0.18	0.11	0.31	0.10
50th-Percentile Queue Length [ft]	18.38	17.89	17.26	4.58	2.80	7.65	2.52
95th-Percentile Queue Length [veh]	1.32	1.29	1.24	0.33	0.20	0.55	0.18
95th-Percentile Queue Length [ft]	33.08	32.21	31.07	8.24	5.04	13.77	4.53

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	22.49	22.58	1.80	0.74	3.07	1.68
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	22.53		1.26		2.33	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.83					
Intersection LOS	A					
Intersection V/C	0.095					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	11.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	75.00	140.00	100.00	70.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	98	980	8	15	1018	49	46	42	185	0	6	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	41	0	40	10	0	0	1	0	0	2	120
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	33	0	0	41	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	98	1054	8	55	1069	49	46	43	185	0	8	128
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	264	2	14	267	12	12	11	46	0	2	32
Total Analysis Volume [veh/h]	98	1054	8	55	1069	49	46	43	185	0	8	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	29	0	10	28	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	36	36	5	35	35	12	12	12	12	12
g / C, Green / Cycle	0.11	0.61	0.61	0.09	0.59	0.59	0.20	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.06	0.33	0.01	0.03	0.33	0.03	0.04	0.03	0.12	0.00	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1123	1676	1482	1222	1438
c, Capacity [veh/h]	170	1934	864	143	1880	839	258	343	303	342	294
d1, Uniform Delay [s]	25.51	6.95	4.68	25.75	7.62	5.25	24.09	19.49	21.70	0.00	20.98
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.05	1.11	0.02	1.69	1.25	0.13	0.33	0.16	1.99	0.00	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

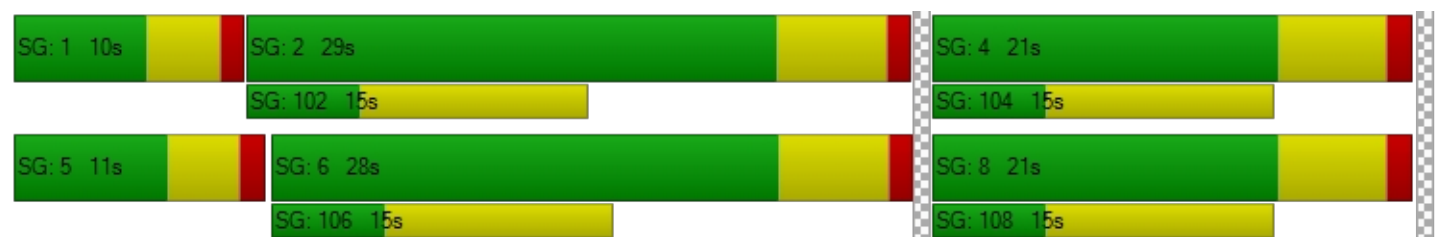
X, volume / capacity	0.58	0.54	0.01	0.38	0.57	0.06	0.18	0.13	0.61	0.00	0.46
d, Delay for Lane Group [s/veh]	28.56	8.06	4.70	27.44	8.87	5.38	24.42	19.65	23.69	0.00	22.11
Lane Group LOS	C	A	A	C	A	A	C	B	C	A	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.40	3.18	0.03	0.74	3.13	0.21	0.56	0.45	2.26	0.00	1.58
50th-Percentile Queue Length [ft]	35.01	79.46	0.85	18.57	78.34	5.20	14.12	11.33	56.61	0.00	39.56
95th-Percentile Queue Length [veh]	2.52	5.72	0.06	1.34	5.64	0.37	1.02	0.82	4.08	0.00	2.85
95th-Percentile Queue Length [ft]	63.01	143.03	1.54	33.42	141.01	9.37	25.41	20.40	101.90	0.00	71.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.56	8.06	4.70	27.44	8.87	5.38	24.42	19.65	23.69	0.00	22.11	22.11
Movement LOS	C	A	A	C	A	A	C	B	C	A	C	C
d_A, Approach Delay [s/veh]	9.77			9.60			23.18			22.11		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	11.65											
Intersection LOS	B											
Intersection V/C	0.521											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	26.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.131

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	2	208	0	3	197	8	27	0	21	1	3	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	33	0	52	9	0	0	40	1	0	119	155
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	241	0	55	206	8	27	40	22	1	122	160
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	60	0	14	52	2	7	10	6	0	31	40
Total Analysis Volume [veh/h]	5	241	0	55	206	8	27	40	22	1	122	160
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.13	0.10	0.03	0.00	0.30	0.20
d_M, Delay for Movement [s/veh]	7.66	0.00	0.00	7.83	0.00	0.00	26.05	17.33	12.86	21.42	20.17	15.83
Movement LOS	A	A	A	A	A	A	D	C	B	C	C	C
95th-Percentile Queue Length [veh]	0.66	0.66	0.66	0.76	0.76	0.76	1.00	1.00	1.00	2.81	2.81	2.81
95th-Percentile Queue Length [ft]	16.54	16.54	16.54	18.99	18.99	18.99	25.01	25.01	25.01	70.36	70.36	70.36
d_A, Approach Delay [s/veh]	0.16			1.60			18.87			17.72		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.08											
Intersection LOS	D											

**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	11.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.103

**Intersection Setup**

Name	Eucalyptus Ave					
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↩↪		↩		↩↪	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Eucalyptus Ave					
Base Volume Input [veh/h]	9	4	1	6	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	54	8	74	18	23	219
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	12	75	24	23	219
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	3	19	6	6	55
Total Analysis Volume [veh/h]	63	12	75	24	23	219
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.10	0.01	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	11.58	8.89	0.00	0.00	7.58	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.34	0.04	0.00	0.00	0.05	0.00
95th-Percentile Queue Length [ft]	8.59	0.97	0.00	0.00	1.24	0.00
d_A, Approach Delay [s/veh]	11.15		0.00		0.72	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.43					
Intersection LOS	B					

**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	20.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	1	1045	159	239	851	1	17	37	7	116	1	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	25	10	0	0	0	0	0	81	1	41
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	7	41	0	0	0	0	0	6	0	33
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1045	191	290	851	1	17	37	7	203	2	175
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	261	48	73	213	0	4	9	2	51	1	44
Total Analysis Volume [veh/h]	1	1045	191	290	851	1	17	37	7	203	2	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	17	31	0	17	31	0	0	22	0	0	22	17
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	2	29	29	15	42	42	20	20
g / C, Green / Cycle	0.03	0.41	0.41	0.21	0.59	0.59	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.00	0.33	0.13	0.18	0.25	0.25	0.04	0.28
s, saturation flow rate [veh/h]	1597	3192	1425	1597	1676	1676	1481	1351
c, Capacity [veh/h]	57	1322	590	342	994	994	489	465
d1, Uniform Delay [s]	32.57	17.85	13.87	26.40	7.78	7.78	18.52	24.58
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.20
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	4.88	1.45	5.83	1.35	1.35	0.11	6.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

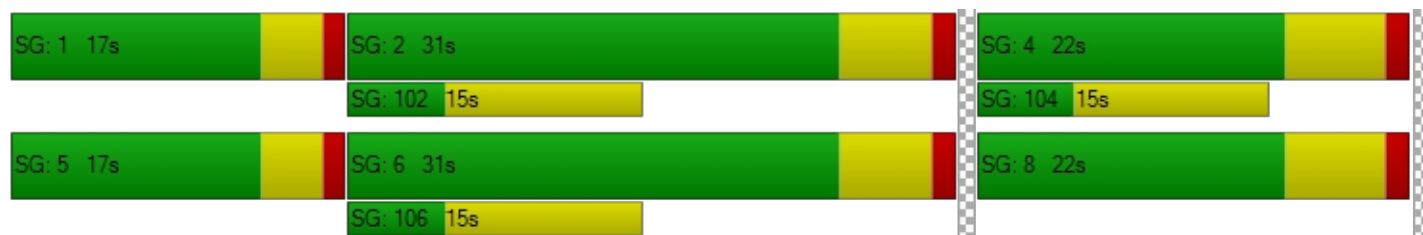
X, volume / capacity	0.02	0.79	0.32	0.85	0.43	0.43	0.12	0.82
d, Delay for Lane Group [s/veh]	32.69	22.73	15.32	32.23	9.13	9.13	18.63	30.94
Lane Group LOS	C	C	B	C	A	A	B	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.02	7.15	2.01	4.78	2.97	2.97	0.68	6.62
50th-Percentile Queue Length [ft]	0.43	178.74	50.34	119.62	74.31	74.29	17.07	165.46
95th-Percentile Queue Length [veh]	0.03	11.53	3.62	8.37	5.35	5.35	1.23	10.84
95th-Percentile Queue Length [ft]	0.78	288.37	90.62	209.31	133.76	133.71	30.73	270.94

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.69	22.73	15.32	32.23	9.13	9.13	18.63	18.63	18.63	30.94	30.94	30.94
Movement LOS	C	C	B	C	A	A	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	21.59			14.99			18.63			30.94		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	20.12											
Intersection LOS	C											
Intersection V/C	0.790											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type: All-way stop  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 19.7  
 Level Of Service: C  
 Volume to Capacity (v/c): 0.796

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merrill Ave Eastbound			Merrill Ave Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave Southbound			Merrill Ave Eastbound			Merrill Ave Westbound		
Base Volume Input [veh/h]	0	0	0	145	0	75	106	350	0	0	100	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	9	0	0	0	35	0	0	123	36
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	48	0	0	39	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	154	0	75	106	433	0	0	262	132
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	39	0	19	27	108	0	0	66	33
Total Analysis Volume [veh/h]	0	0	0	154	0	75	106	433	0	0	262	132
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	498	580	677	681
Degree of Utilization, x	0.00	0.39	0.80	0.58

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.00	1.88	8.00	3.74
95th-Percentile Queue Length [ft]	0.00	46.94	200.07	93.38
Approach Delay [s/veh]	0.00	13.20	25.76	15.30
Approach LOS	A	B	D	C
Intersection Delay [s/veh]	19.74			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Two-way stop	Delay (sec / veh):	36.6
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.453

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			← →			+			← →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	25	1	15	6	1	0	2	552	8	1	165	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	79	0	42	13	32	0	0	117	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	7	0	7	9	39	0	0	32	10
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	1	15	92	1	49	24	623	8	1	314	38
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	4	23	0	12	6	156	2	0	79	10
Total Analysis Volume [veh/h]	25	1	15	92	1	49	24	623	8	1	314	38
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.13	0.00	0.03	0.45	0.00	0.07	0.02	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	25.95	23.64	15.17	36.57	21.01	10.50	8.04	0.00	0.00	8.79	0.00	0.00
Movement LOS	D	C	C	E	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.57	0.57	0.57	2.15	0.24	0.24	3.39	3.39	3.39	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	14.19	14.19	14.19	53.71	5.93	5.93	84.85	84.85	84.85	0.08	0.00	0.00
d_A, Approach Delay [s/veh]	21.95			27.46			0.29			0.02		
Approach LOS	C			D			A			A		
d_I, Intersection Delay [s/veh]	4.20											
Intersection LOS	E											

**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	59.2
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.864

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	1	0	1	1	0	0
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	70.00	100.00	70.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	75	549	27	48	945	84	207	28	344	36	4	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	63	0	0	0	0	83	261	0	202	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	21	0	0	0	0	18	13	0	17	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	549	27	48	945	185	481	28	563	36	4	22
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	137	7	12	236	46	120	7	141	9	1	6
Total Analysis Volume [veh/h]	159	549	27	48	945	185	481	28	563	36	4	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	43	0	10	39	36	36	41	0	16	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	12	43	43	6	38	38	34	47	47	6	18	18
g / C, Green / Cycle	0.11	0.40	0.40	0.06	0.34	0.34	0.31	0.42	0.42	0.05	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.10	0.17	0.02	0.02	0.35	0.35	0.30	0.02	0.40	0.02	0.00	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	3101	1676	1582	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	174	1261	563	182	578	546	494	708	602	81	276	234
d1, Uniform Delay [s]	48.48	24.30	20.51	49.50	36.04	36.04	37.57	18.65	30.32	50.68	38.50	39.01
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.48	0.11	0.46	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.47	1.10	0.16	0.76	38.57	40.30	34.09	0.02	22.56	3.74	0.02	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.91	0.44	0.05	0.26	1.00	1.01	0.97	0.04	0.94	0.44	0.01	0.09
d, Delay for Lane Group [s/veh]	64.95	25.40	20.67	50.26	74.61	76.34	71.66	18.68	52.88	54.43	38.52	39.18
Lane Group LOS	E	C	C	D	F	F	E	B	D	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	5.01	5.21	0.44	0.64	20.91	20.00	16.91	0.41	17.08	1.03	0.09	0.51
50th-Percentile Queue Length [ft]	125.36	130.32	11.05	15.98	522.73	499.97	422.69	10.29	426.98	25.75	2.26	12.68
95th-Percentile Queue Length [veh]	8.69	8.96	0.80	1.15	28.50	27.47	23.65	0.74	23.86	1.85	0.16	0.91
95th-Percentile Queue Length [ft]	217.18	223.93	19.89	28.76	712.49	686.67	591.28	18.52	596.42	46.35	4.08	22.82

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	64.95	25.40	20.67	50.26	75.28	76.34	71.66	18.68	52.88	54.43	38.52	39.18
Movement LOS	E	C	C	D	E	E	E	B	D	D	D	D
d_A, Approach Delay [s/veh]	33.78			74.42			60.42			47.99		
Approach LOS	C			E			E			D		
d_I, Intersection Delay [s/veh]	59.15											
Intersection LOS	E											
Intersection V/C	0.864											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	21.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.772

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↔		↔↓		↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	350.00	250.00	100.00	100.00	200.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	399	272	562	757	246	258
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	0	148	54	0	46
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	8	0	10	7	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	424	272	720	818	246	318
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	106	68	180	205	62	80
Total Analysis Volume [veh/h]	424	272	720	818	246	318
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	2	7	1	6	7	4
Auxiliary Signal Groups		2,7				1,4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	5.2	3.2	3.6	5.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	22	20	38	60	20	20
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	25	41	35	62	14	51
g / C, Green / Cycle	0.31	0.51	0.44	0.77	0.18	0.64
(v / s)_i Volume / Saturation Flow Rate	0.23	0.17	0.41	0.44	0.14	0.20
s, saturation flow rate [veh/h]	1863	1583	1774	1863	1774	1583
c, Capacity [veh/h]	571	768	776	1433	321	967
d1, Uniform Delay [s]	24.90	12.82	21.29	3.80	31.16	7.58
k, delay calibration	0.50	0.50	0.44	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.47	1.28	16.96	1.66	3.85	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

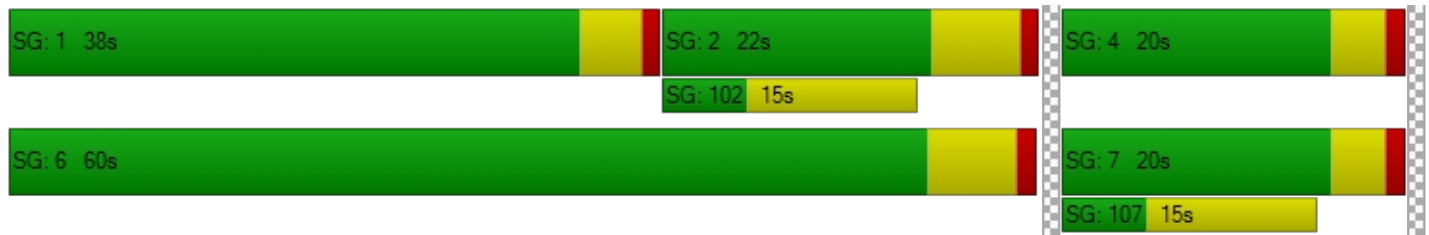
X, volume / capacity	0.74	0.35	0.93	0.57	0.77	0.33
d, Delay for Lane Group [s/veh]	33.37	14.10	38.25	5.46	35.01	7.77
Lane Group LOS	C	B	D	A	D	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	7.71	2.79	14.21	2.58	4.59	2.17
50th-Percentile Queue Length [ft]	192.74	69.67	355.17	64.50	114.86	54.33
95th-Percentile Queue Length [veh]	12.26	5.02	20.39	4.64	8.11	3.91
95th-Percentile Queue Length [ft]	306.57	125.40	509.71	116.10	202.74	97.80

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.37	14.10	38.25	5.46	35.01	7.77
Movement LOS	C	B	D	A	D	A
d_A, Approach Delay [s/veh]	25.84		20.81		19.65	
Approach LOS	C		C		B	
d_I, Intersection Delay [s/veh]	21.83					
Intersection LOS	C					
Intersection V/C	0.772					

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	23.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.572

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	200.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	180	464	272	201	472	169	269	643	68	466	568	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	0	0	6	18	103	27	0	32	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	10	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	464	272	201	472	175	287	756	95	466	614	136
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	116	68	50	118	44	72	189	24	117	154	34
Total Analysis Volume [veh/h]	188	464	272	201	472	175	287	756	95	466	614	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	12	22	16	11	21	12	12	21	12	16	25	11
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	25	25	8	25	25	9	17	17	13	21	21
g / C, Green / Cycle	0.10	0.35	0.35	0.11	0.35	0.35	0.13	0.24	0.24	0.19	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.06	0.10	0.19	0.06	0.15	0.12	0.09	0.17	0.07	0.15	0.19	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	3192	1425	3101	4567	1425	3101	3192	1425
c, Capacity [veh/h]	324	1597	498	334	1127	503	417	1084	338	592	938	419
d1, Uniform Delay [s]	29.89	16.48	18.29	29.80	17.20	16.70	28.89	24.39	21.81	26.96	21.61	19.30
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.65	0.46	4.25	1.75	1.15	1.90	2.02	0.82	0.45	2.37	0.78	0.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

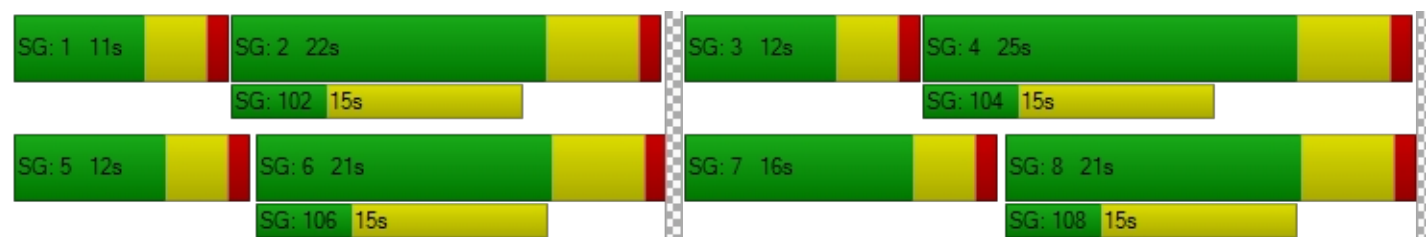
X, volume / capacity	0.58	0.29	0.55	0.60	0.42	0.35	0.69	0.70	0.28	0.79	0.65	0.32
d, Delay for Lane Group [s/veh]	31.54	16.94	22.55	31.55	18.34	18.60	30.91	25.21	22.26	29.33	22.40	19.74
Lane Group LOS	C	B	C	C	B	B	C	C	C	C	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.48	1.67	3.71	1.59	2.74	2.11	2.25	3.55	1.21	3.59	4.05	1.62
50th-Percentile Queue Length [ft]	37.10	41.72	92.86	39.69	68.39	52.66	56.27	88.84	30.30	89.84	101.36	40.38
95th-Percentile Queue Length [veh]	2.67	3.00	6.69	2.86	4.92	3.79	4.05	6.40	2.18	6.47	7.30	2.91
95th-Percentile Queue Length [ft]	66.77	75.10	167.14	71.44	123.10	94.78	101.28	159.91	54.54	161.71	182.44	72.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.54	16.94	22.55	31.55	18.34	18.60	30.91	25.21	22.26	29.33	22.40	19.74
Movement LOS	C	B	C	C	B	B	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	21.56			21.53			26.40			24.76		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.83											
Intersection LOS	C											
Intersection V/C	0.572											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	16.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↑↶			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	170	0	586	0	1006	373	395	917	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	1	0	22	81	0	31	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	3	0	1	9	0	11	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	170	0	590	0	1029	463	395	959	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	43	0	148	0	257	116	99	240	0
Total Analysis Volume [veh/h]	0	0	0	170	0	590	0	1029	463	395	959	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0	
Auxiliary Signal Groups													
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-	
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0	
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0	
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0	
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
Split [s]	0	0	0	0	19	0	0	11	0	30	41	0	
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0	
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0	
Rest In Walk					No			No			No		
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
Minimum Recall					No			No		No	No		
Maximum Recall					No			No		No	No		
Pedestrian Recall					No			No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		16	16	16	26	26	11	40
g / C, Green / Cycle		0.27	0.27	0.27	0.44	0.44	0.19	0.66
(v / s)_i Volume / Saturation Flow Rate		0.11	0.21	0.21	0.32	0.32	0.13	0.30
s, saturation flow rate [veh/h]		1597	1425	1425	3192	1425	3101	3192
c, Capacity [veh/h]		431	384	384	1403	626	592	2118
d1, Uniform Delay [s]		17.90	20.17	20.17	13.91	13.96	22.51	4.85
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.59	3.24	3.24	3.44	7.66	1.31	0.70
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity		0.39	0.77	0.77	0.73	0.74	0.67	0.45
d, Delay for Lane Group [s/veh]		18.49	23.41	23.41	17.35	21.62	23.82	5.56
Lane Group LOS		B	C	C	B	C	C	A
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		1.75	3.63	3.63	5.22	5.44	2.41	1.76
50th-Percentile Queue Length [ft]		43.77	90.79	90.79	130.40	135.97	60.21	44.04
95th-Percentile Queue Length [veh]		3.15	6.54	6.54	8.96	9.26	4.33	3.17
95th-Percentile Queue Length [ft]		78.79	163.42	163.42	224.04	231.59	108.37	79.28

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	18.49	23.41	23.41	0.00	17.35	21.62	23.82	5.56	0.00
Movement LOS				B	C	C		B	C	C	A	
d_A, Approach Delay [s/veh]	0.00			22.31			18.67			10.88		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	16.52											
Intersection LOS	B											
Intersection V/C	0.659											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	17.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↑↵						↵↑↵			↵↑↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	356	0	612	0	0	0	390	816	0	0	958	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	25	0	0	0	0	0	4	18	0	0	6	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	11	0	0	0	0	0	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	392	0	612	0	0	0	395	834	0	0	964	229
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	98	0	153	0	0	0	99	209	0	0	241	57
Total Analysis Volume [veh/h]	392	0	612	0	0	0	395	834	0	0	964	229
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	60	60	60		60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	21	21	21		11	35	22	22
g / C, Green / Cycle	0.35	0.35	0.35		0.18	0.59	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.21	0.23	0.23		0.13	0.26	0.30	0.16
s, saturation flow rate [veh/h]	1597	1452	1425		3101	3192	3192	1425
c, Capacity [veh/h]	553	503	494		570	1873	1180	527
d1, Uniform Delay [s]	16.21	16.65	16.75		22.90	6.93	17.08	14.20
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.85	6.81	7.30		1.52	0.17	1.45	0.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

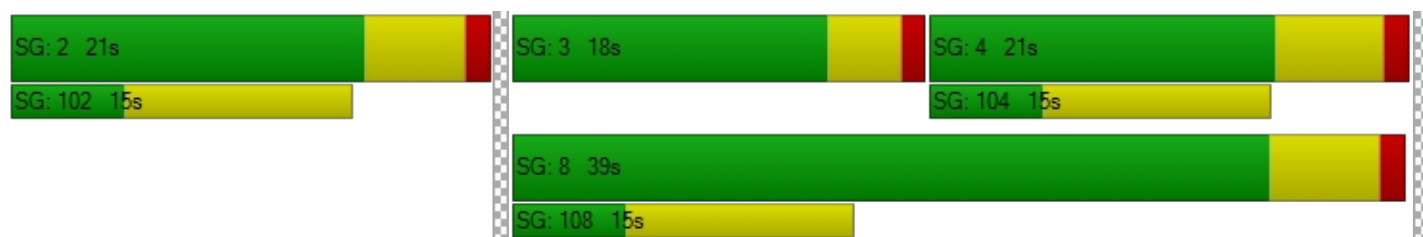
X, volume / capacity	0.60	0.67	0.68		0.69	0.45	0.82	0.43
d, Delay for Lane Group [s/veh]	21.06	23.46	24.05		24.42	7.10	18.52	14.77
Lane Group LOS	C	C	C		C	A	B	B
Critical Lane Group	No	No	Yes		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	3.95	4.24	4.31		2.45	2.04	5.17	2.03
50th-Percentile Queue Length [ft]	98.76	106.08	107.81		61.16	50.94	129.20	50.78
95th-Percentile Queue Length [veh]	7.11	7.62	7.72		4.40	3.67	8.90	3.66
95th-Percentile Queue Length [ft]	177.77	190.54	192.95		110.09	91.69	222.41	91.41

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	21.41	23.46	23.78	0.00	0.00	0.00	24.42	7.10	0.00	0.00	18.52	14.77
Movement LOS	C	C	C				C	A			B	B
d_A, Approach Delay [s/veh]	22.86			0.00			12.67			17.80		
Approach LOS	C			A			B			B		
d_I, Intersection Delay [s/veh]	17.44											
Intersection LOS	B											
Intersection V/C	0.664											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	31.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.747

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	48	710	43	217	708	76	270	782	45	30	221	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	25	0	0	81	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	7	0	0	6	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	742	43	217	795	76	270	782	45	30	221	160
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	186	11	54	199	19	68	196	11	8	55	40
Total Analysis Volume [veh/h]	48	742	43	217	795	76	270	782	45	30	221	160
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	13	24	15	15	26	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	23	23	11	28	28	13	24	24	4	15	15
g / C, Green / Cycle	0.08	0.32	0.32	0.16	0.41	0.41	0.19	0.34	0.34	0.06	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.03	0.15	0.30	0.30	0.19	0.28	0.28	0.02	0.13	0.14
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1442	1416	1487	1459	1416	1487	1286
c, Capacity [veh/h]	108	915	408	223	601	583	263	507	497	91	327	283
d1, Uniform Delay [s]	30.93	21.73	16.60	29.36	17.68	17.68	28.50	21.14	21.14	31.29	24.62	24.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.20	0.20	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.88	7.74	0.52	22.65	7.81	8.05	32.80	6.08	6.20	2.06	1.86	2.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

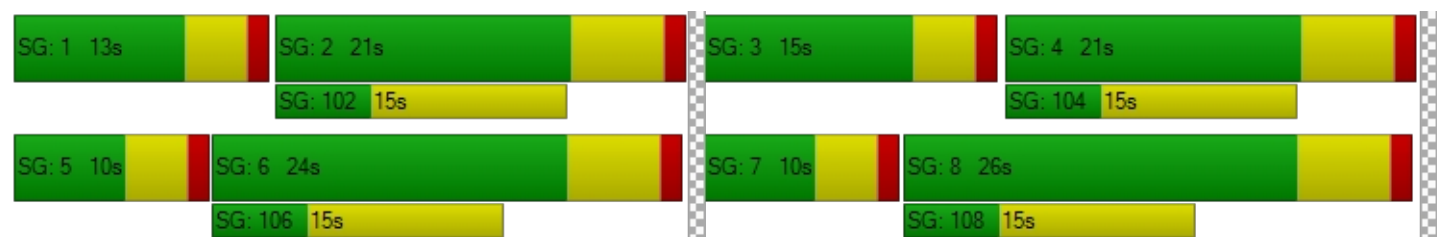
X, volume / capacity	0.45	0.81	0.11	0.98	0.74	0.74	1.03	0.82	0.82	0.33	0.61	0.64
d, Delay for Lane Group [s/veh]	33.81	29.47	17.12	52.02	25.49	25.74	61.30	27.22	27.35	33.35	26.47	27.22
Lane Group LOS	C	C	B	D	C	C	F	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.81	5.92	0.50	4.86	6.77	6.60	6.43	6.35	6.25	0.51	2.90	2.69
50th-Percentile Queue Length [ft]	20.33	147.96	12.39	121.53	169.13	165.06	160.81	158.83	156.29	12.70	72.59	67.15
95th-Percentile Queue Length [veh]	1.46	9.91	0.89	8.48	11.03	10.82	10.72	10.49	10.35	0.91	5.23	4.83
95th-Percentile Queue Length [ft]	36.60	247.70	22.30	211.93	275.77	270.40	268.03	262.17	258.80	22.86	130.67	120.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.81	29.47	17.12	52.02	25.60	25.74	61.30	27.28	27.35	33.35	26.55	27.22
Movement LOS	C	C	B	D	C	C	F	C	C	C	C	C
d_A, Approach Delay [s/veh]	29.09			30.88			35.66			27.30		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	31.54											
Intersection LOS	C											
Intersection V/C	0.747											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type:	Signalized	Delay (sec / veh):	47.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	2	1	0	0	1	0	1	2	0	0
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	10	574	914	66	624	6	7	387	46	472	91	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	0	0	64	17	5	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	5	0	0	4	2	2	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	599	914	66	692	25	14	387	46	472	91	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	150	229	17	173	6	4	97	12	118	23	7
Total Analysis Volume [veh/h]	10	599	914	66	692	25	14	387	46	472	91	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	24	35	10	24	0	10	21	0	35	46	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	24	56	6	27	27	4	21	31	48
g / C, Green / Cycle	0.04	0.27	0.63	0.07	0.30	0.30	0.04	0.24	0.34	0.54
(v / s)_i Volume / Saturation Flow Rate	0.01	0.19	0.65	0.04	0.22	0.22	0.01	0.23	0.15	0.07
s, saturation flow rate [veh/h]	1573	3146	1404	1573	1652	1632	1573	1652	3056	1590
c, Capacity [veh/h]	58	836	848	109	493	487	64	390	1039	851
d1, Uniform Delay [s]	42.01	29.97	17.84	40.68	28.35	28.36	41.76	34.30	23.18	10.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.23	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.39	5.24	54.29	5.29	9.27	9.39	1.67	29.30	0.31	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

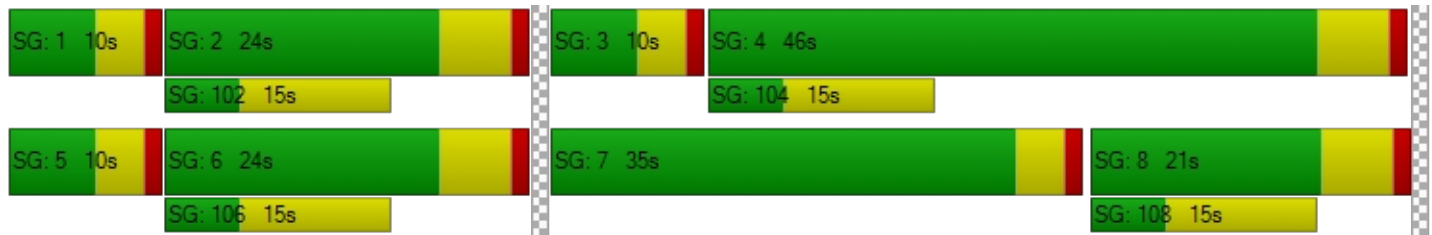
X, volume / capacity	0.17	0.72	1.08	0.60	0.73	0.73	0.22	0.99	0.45	0.14
d, Delay for Lane Group [s/veh]	43.41	35.21	72.13	45.97	37.62	37.74	43.43	63.60	23.49	10.57
Lane Group LOS	D	D	F	D	D	D	D	E	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.23	6.17	26.88	1.53	7.83	7.75	0.32	11.13	3.72	1.06
50th-Percentile Queue Length [ft]	5.78	154.20	671.96	38.33	195.66	193.77	8.04	278.22	93.03	26.55
95th-Percentile Queue Length [veh]	0.42	10.24	37.64	2.76	12.41	12.32	0.58	16.60	6.70	1.91
95th-Percentile Queue Length [ft]	10.40	256.03	941.03	69.00	310.35	307.92	14.46	415.00	167.46	47.79

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.41	35.21	72.13	45.97	37.68	37.74	43.43	63.60	0.00	23.49	10.57	10.57
Movement LOS	D	D	F	D	D	D	D	E		C	B	B
d_A, Approach Delay [s/veh]	57.42			38.38			62.90			20.92		
Approach LOS	E			D			E			C		
d_I, Intersection Delay [s/veh]	47.04											
Intersection LOS	D											
Intersection V/C	0.564											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	21.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	204	456	123	160	576	280	389	948	177	93	318	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	14	0	0	44	10	3	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	7	0	0	5	2	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	204	477	123	160	625	292	393	948	177	93	318	34
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	119	31	40	156	73	98	237	44	23	80	9
Total Analysis Volume [veh/h]	204	477	123	160	625	292	393	948	177	93	318	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.6	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	22	0	11	22	15	15	27	0	10	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	27	27	7	27	27	12	21	21	7	15	15
g / C, Green / Cycle	0.11	0.39	0.39	0.11	0.38	0.38	0.17	0.30	0.30	0.10	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.09	0.05	0.14	0.20	0.13	0.21	0.12	0.03	0.07	0.02
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	352	1767	551	329	1733	541	538	1349	421	302	1001	312
d1, Uniform Delay [s]	29.44	14.69	14.40	29.49	15.62	16.95	27.37	21.93	19.85	29.40	22.94	21.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.51	0.38	0.94	1.11	0.58	3.84	1.93	0.68	0.67	0.57	0.18	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

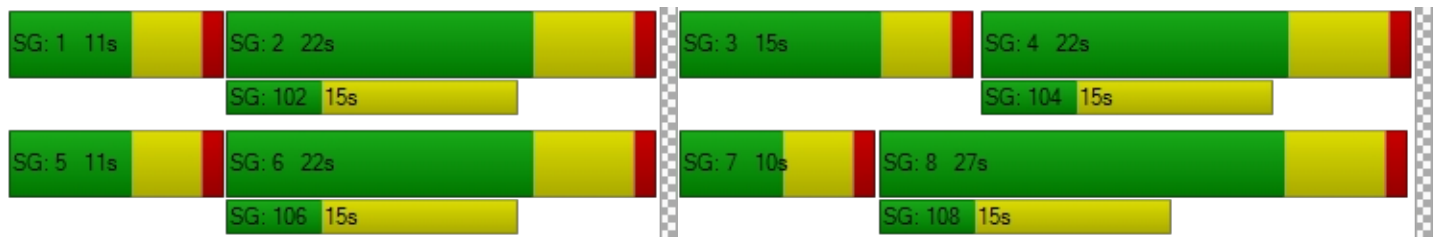
X, volume / capacity	0.58	0.27	0.22	0.49	0.36	0.54	0.73	0.70	0.42	0.31	0.32	0.11
d, Delay for Lane Group [s/veh]	30.95	15.07	15.33	30.60	16.20	20.79	29.30	22.61	20.52	29.97	23.12	22.02
Lane Group LOS	C	B	B	C	B	C	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.59	1.58	1.30	1.24	2.20	3.78	3.01	4.22	2.17	0.71	1.37	0.43
50th-Percentile Queue Length [ft]	39.79	39.57	32.41	30.90	54.94	94.43	75.23	105.49	54.35	17.64	34.18	10.65
95th-Percentile Queue Length [veh]	2.86	2.85	2.33	2.22	3.96	6.80	5.42	7.59	3.91	1.27	2.46	0.77
95th-Percentile Queue Length [ft]	71.62	71.22	58.34	55.62	98.89	169.98	135.42	189.72	97.82	31.75	61.53	19.17

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.95	15.07	15.33	30.60	16.20	20.79	29.30	22.61	20.52	29.97	23.12	22.02
Movement LOS	C	B	B	C	B	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.14			19.58			24.10			24.47		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	21.84											
Intersection LOS	C											
Intersection V/C	0.508											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 46: Hellman Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	9.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.206

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	87	51	34	111	143	97
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	51	34	111	143	97
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	13	9	28	36	24
Total Analysis Volume [veh/h]	87	51	34	111	143	97
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.8	0.0	4.8	0.0	0.0	4.8
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	27	0	33	0	0	33
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	25	25	31	31	31	31
g / C, Green / Cycle	0.42	0.42	0.52	0.52	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.06	0.04	0.02	0.09	0.14	0.07
s, saturation flow rate [veh/h]	1416	1264	1487	1264	988	1487
c, Capacity [veh/h]	590	527	768	653	568	768
d1, Uniform Delay [s]	10.88	10.64	7.17	7.68	10.48	7.50
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.53	0.37	0.11	0.56	1.06	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.15	0.10	0.04	0.17	0.25	0.13
d, Delay for Lane Group [s/veh]	11.40	11.00	7.28	8.25	11.54	7.84
Lane Group LOS	B	B	A	A	B	A
Critical Lane Group	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.68	0.39	0.19	0.68	1.13	0.56
50th-Percentile Queue Length [ft]	16.95	9.82	4.68	16.91	28.31	14.04
95th-Percentile Queue Length [veh]	1.22	0.71	0.34	1.22	2.04	1.01
95th-Percentile Queue Length [ft]	30.52	17.68	8.43	30.44	50.96	25.28

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	11.40	11.00	7.28	8.25	11.54	7.84
Movement LOS	B	B	A	A	B	A
d_A, Approach Delay [s/veh]	11.26		8.02		10.04	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	9.80					
Intersection LOS	A					
Intersection V/C	0.206					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 47: Hellman Ave/Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

**Intersection Setup**

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		↑		⇐⇐	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	573	170	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	308	62	18	110	69	101
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	15	18	22	23	24	18
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	323	80	40	706	263	119
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	20	10	177	66	30
Total Analysis Volume [veh/h]	323	80	40	706	263	119
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.8	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	24	0	0	36	36	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C	C
C, Cycle Length [s]	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	22	22	34	34	34
g / C, Green / Cycle	0.37	0.37	0.57	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.23	0.06	0.51	0.13	0.14
s, saturation flow rate [veh/h]	1416	1264	1453	1487	1340
c, Capacity [veh/h]	519	463	886	843	759
d1, Uniform Delay [s]	15.59	12.85	11.38	6.46	6.57
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.53	0.81	9.51	0.63	0.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.62	0.17	0.84	0.23	0.25
d, Delay for Lane Group [s/veh]	21.11	13.66	20.89	7.09	7.37
Lane Group LOS	C	B	C	A	A
Critical Lane Group	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.82	0.72	8.16	1.00	1.03
50th-Percentile Queue Length [ft]	95.43	18.01	203.95	24.94	25.83
95th-Percentile Queue Length [veh]	6.87	1.30	12.84	1.80	1.86
95th-Percentile Queue Length [ft]	171.78	32.42	321.05	44.89	46.49

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	21.11	13.66	20.89	20.89	7.16	7.37
Movement LOS	C	B	C	C	A	A
d_A, Approach Delay [s/veh]	19.63		20.89		7.23	
Approach LOS	B		C		A	
d_I, Intersection Delay [s/veh]	17.15					
Intersection LOS	B					
Intersection V/C	0.742					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 66: Archibald Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	4.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.395

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	0	868	30	47	1093	0	0	0	0	2	0	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	261	0	0	83	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	3	0	0	4	14	10	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1132	30	47	1180	14	10	0	0	2	0	22
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	283	8	12	295	4	3	0	0	1	0	6
Total Analysis Volume [veh/h]	0	1132	30	47	1180	14	10	0	0	2	0	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	31	0	19	40	0	0	50	0	0	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	81	81	6	85	85	7	7	7	7
g / C, Green / Cycle	0.03	0.81	0.81	0.06	0.85	0.85	0.07	0.07	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.00	0.35	0.35	0.03	0.36	0.36	0.01	0.00	0.00	0.02
s, saturation flow rate [veh/h]	3101	1676	1661	1597	1676	1670	1246	1676	1425	1409
c, Capacity [veh/h]	82	1355	1342	101	1416	1411	111	115	98	136
d1, Uniform Delay [s]	0.00	2.83	2.83	45.20	1.87	1.87	47.30	0.00	0.00	44.10
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	1.00	1.01	3.30	0.93	0.93	0.35	0.00	0.00	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

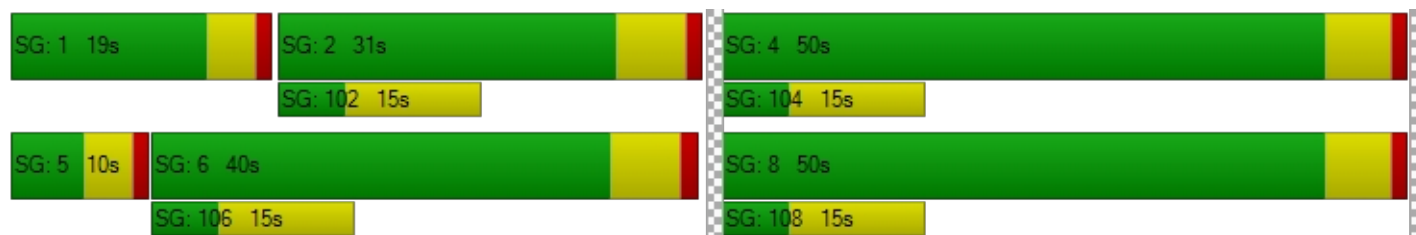
X, volume / capacity	0.00	0.43	0.43	0.47	0.42	0.42	0.09	0.00	0.00	0.18
d, Delay for Lane Group [s/veh]	0.00	3.83	3.84	48.50	2.79	2.80	47.64	0.00	0.00	44.72
Lane Group LOS	A	A	A	D	A	A	D	A	A	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.00	1.73	1.72	1.17	0.83	0.83	0.25	0.00	0.00	0.57
50th-Percentile Queue Length [ft]	0.00	43.35	43.06	29.24	20.68	20.64	6.21	0.00	0.00	14.33
95th-Percentile Queue Length [veh]	0.00	3.12	3.10	2.11	1.49	1.49	0.45	0.00	0.00	1.03
95th-Percentile Queue Length [ft]	0.00	78.03	77.52	52.63	37.22	37.15	11.18	0.00	0.00	25.80

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	3.83	3.84	48.50	2.80	2.80	47.64	0.00	0.00	44.72	44.72	44.72
Movement LOS	A	A	A	D	A	A	D	A	A	D	D	D
d_A, Approach Delay [s/veh]	3.83			4.53			47.64			44.72		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	4.77											
Intersection LOS	A											
Intersection V/C	0.395											

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**MITIGATED EXISTING PLUS PROJECT AM/PM PEAK HOUR**

Option 1: Copy of Grove Ave / Edison Ave

Number	27											
Intersection	Grove Ave / Edison Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	21	166	22	35	115	22	32	163	9	47	389	71
Total Analysis Volume [veh/h]	34	204	22	35	329	22	32	163	85	47	389	71

**Intersection Settings**

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	20	0	0	20	0	0	40	0	0	40	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.47	0.47	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.17	0.24	0.19	0.32
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1571	1615	1463	1586
c, Capacity [veh/h]	808	827	587	629
X, volume / capacity	0.32	0.47	0.48	0.81
d, Delay for Lane Group [s/veh]	11.00	12.82	15.74	20.74
Lane Group LOS	B	B	B	C
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	1.78	2.95	2.62	5.94

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50th-Percentile Queue Length [ft]	44.42	73.63	65.60	148.51
95th-Percentile Queue Length [veh]	3.20	5.30	4.72	9.94
95th-Percentile Queue Length [ft]	79.95	132.54	118.09	248.44

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	11.00	11.00	11.00	12.82	12.82	12.82	15.74	15.74	15.74	20.74	20.74	20.74
Movement LOS	B	B	B	B	B	B	B	B	B	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No	Yes	No
d_A, Approach Delay [s/veh]	11.00			12.82			15.74			20.74		
Approach LOS	B			B			B			C		
d_I, Intersection Delay [s/veh]	15.86											
Intersection LOS	B											
Intersection V/C	0.559											

Option 1: Copy of Grove Ave / Edison Ave

Number	27											
Intersection	Grove Ave / Edison Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	12	177	52	61	173	33	48	401	17	28	189	17
Total Analysis Volume [veh/h]	110	267	52	61	202	33	48	401	48	42	189	19

**Intersection Settings**

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	20	0	0	20	0	0	40	0	0	40	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.48	0.48	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.30	0.21	0.31	0.18
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1441	1387	1595	1401
c, Capacity [veh/h]	767	738	619	556
X, volume / capacity	0.56	0.40	0.80	0.45
d, Delay for Lane Group [s/veh]	14.17	11.52	20.94	15.65
Lane Group LOS	B	B	C	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	3.47	2.09	5.85	2.32

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50th-Percentile Queue Length [ft]	86.72	52.17	146.29	57.91
95th-Percentile Queue Length [veh]	6.24	3.76	9.82	4.17
95th-Percentile Queue Length [ft]	156.09	93.91	245.47	104.24

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	14.17	14.17	14.17	11.52	11.52	11.52	20.94	20.94	20.94	15.65	15.65	15.65
Movement LOS	B	B	B	B	B	B	C	C	C	B	B	B
Critical Movement	No	No	No	No	No	No	No	Yes	No	No	No	No
d_A, Approach Delay [s/veh]	14.17			11.52			20.94			15.65		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	16.17											
Intersection LOS	B											
Intersection V/C	0.609											

**OPENING YEAR (2023) PLUS PROJECT AM/PM PEAK HOUR**



Opening Year 2023 with Project AM

Vistro File: V:\...\20180201\_PHF&LTrev-  
Exst+cum23+Proj.vistro

Scenario 7 Ex+Cumm+Proj2023 AM Peak

Report File: V:\...\Future 2023 With Proj AM.pdf

2/8/2018

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Euclid Ave / Philadelphia St	Signalized	HCM 2010	WB Thru	0.714	26.6	C
2	Grove Ave / Philadelphia St	Signalized	HCM 2010	NB Left	0.507	18.6	B
3	Archibald Ave / Philadelphia St	Signalized	HCM 2010	EB Left	0.348	15.3	B
4	SR60 WB Ramp / Euclid Ave	Signalized	HCM 2010	NB Left	0.743	18.6	B
5	SR60 EB Ramp / Euclid Ave	Signalized	HCM 2010	EB Right	0.936	37.6	D
6	SR60 WB Ramp / Grove Ave	Signalized	HCM 2010	NB Left	0.838	22.1	C
7	SR60 EB Ramp / Grove Ave	Signalized	HCM 2010	EB Left	0.902	36.2	D
8	SR60 WB Ramp / Archibald Ave	Signalized	HCM 2010	NB Left	0.631	15.5	B
9	SR60 EB Ramp / Archibald Ave	Signalized	HCM 2010	SB Left	0.802	19.4	B
10	Euclid Ave / Walnut St	Signalized	HCM 2010	NB Left	0.688	20.2	C
11	Grove Ave / Walnut Ave	Signalized	HCM 2010	SB Left	0.509	19.8	B
12	Archibald Ave / Walnut Ave	Signalized	HCM 2010	WB Right	0.531	7.5	A
13	Euclid Ave / Riverside Dr	Signalized	HCM 2010	SB Left	0.726	26.9	C
14	Grove Ave / Riverside Dr	Signalized	HCM 2010	EB Left	0.421	17.1	B
15	Archibald Ave / Riverside Dr	Signalized	HCM 2010	WB Left	0.634	18.5	B
16	Euclid Ave / Chino Ave	Signalized	HCM 2010	WB Thru	1.025	55.5	E
17	Grove Ave / Chino Ave	All-way stop	HCM 2010	SB Thru	1.422	127.9	F
18	Archibald Ave / Chino Ave	Signalized	HCM 2010	EB Left	0.639	20.5	C
19	Euclid Ave / Schaefer Ave	Signalized	HCM 2010	WB Left	0.815	31.5	C
20	Grove Ave / Schaefer Ave	All-way stop	HCM 2010	SB Thru	0.763	18.5	C
21	SR71 SB Ramp / Grand Ave	Signalized	HCM 2010	WB Left	0.664	13.3	B
22	SR71 NB Ramp / Grand Ave	Signalized	HCM 2010	SB Right	0.942	59.7	E
23	Ramona Ave / Edison Ave	Signalized	HCM 2010	EB Left	0.666	23.4	C
24	Central Ave / Edison Ave	Signalized	HCM 2010	EB Left	0.749	27.3	C
25	Mountain Ave/ Edison Ave	Signalized	HCM 2010	EB Left	0.550	15.6	B
26	Euclid Ave / Edison Ave	Signalized	HCM 2010	SB Left	0.654	17.1	B
27	Grove Ave / Edison Ave	All-way stop	HCM 2010	WB Thru	2.308	325.0	F
28	Archibald Ave / Edison Ave	Signalized	HCM 2010	WB Thru	1.095	123.5	F
29	Milliken Ave / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	NB Left	1.384	100.7	F
30	I-15 SB Ramp / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	SB Right	1.057	68.3	E

31	I-15 NB Ramp / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	EB Right	0.367	27.6	C
32	Euclid Ave / Eucalyptus Ave	Signalized	HCM 2010	SB Left	0.783	22.7	C
33	Grove Ave / Eucalyptus Ave	Two-way stop	HCM 2010	WB Left	1.435	735.2	F
34	Carpenter Ave / Eucalyptus Ave	Two-way stop	HCM 2010	NB Left	0.070	15.0	C
35	Euclid Ave / Merrill Ave	Signalized	HCM 2010	WB Left	0.821	78.1	E
36	Grove Ave / Merrill Ave	All-way stop	HCM 2010	EB Thru	1.497	179.9	F
37	Carpenter Ave / Merrill Ave	Two-way stop	HCM 2010	NB Left	2.984	1,285.8	F
38	Archibald Ave / Merrill Ave	Signalized	HCM 2010	WB Left	0.853	34.2	C
39	Archibald Ave / Limonite Ave	Signalized	HCM 2010	WB Right	1.041	58.4	E
40	Hamner Ave / Limonite Ave	Signalized	HCM 2010	WB Thru	1.061	72.1	E
41	I-15 SB Ramp / Limonite Ave	Signalized	HCM 2010	SB Thru	2.167	345.2	F
42	I-15 NB Ramp / Limonite Ave	Signalized	HCM 2010	NB Left	1.093	91.3	F
43	Euclid Ave / Kimball Ave	Signalized	HCM 2010	NB Left	0.700	23.7	C
44	Euclid Ave / Pine Ave	Signalized	HCM 2010	SB Left	0.663	24.4	C
45	Archibald Ave / Schleisman Rd	Signalized	HCM 2010	EB Left	0.716	25.9	C
46	Hellman Ave/Eucalyptus Ave	Signalized	HCM 2010	NB Right	0.377	10.2	B
47	Hellman Ave/Merrill Ave	Signalized	HCM 2010	SB Right	0.474	9.1	A
66	Archibald Ave / Eucalyptus Ave	Signalized	HCM 2010	SB Right	1.278	166.8	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.714

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	138	883	163	56	862	98	109	313	128	179	437	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	22	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	3	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	14	0	0	31	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	905	163	56	918	98	109	313	128	179	437	92
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	238	43	15	242	26	29	82	34	47	115	24
Total Analysis Volume [veh/h]	145	953	172	59	966	103	115	329	135	188	460	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	25	0	10	22	0	9	22	0	13	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	9	25	25	6	22	22	33	23	23	33	24
g / C, Green / Cycle	0.13	0.36	0.36	0.08	0.32	0.32	0.47	0.32	0.32	0.47	0.35
(v / s)_i Volume / Saturation Flow Rate	0.09	0.30	0.12	0.04	0.22	0.22	0.12	0.14	0.15	0.18	0.33
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1661	953	1676	1514	1051	1692
c, Capacity [veh/h]	204	1158	517	130	1009	525	329	539	486	519	590
d1, Uniform Delay [s]	29.27	20.26	16.16	30.68	20.99	21.01	16.82	18.84	18.90	13.93	22.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.28
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.49	6.67	1.73	2.48	3.98	7.51	0.64	0.59	0.67	0.42	17.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.71	0.82	0.33	0.45	0.70	0.70	0.35	0.45	0.46	0.36	0.94
d, Delay for Lane Group [s/veh]	33.76	26.92	17.89	33.15	24.97	28.52	17.46	19.43	19.57	14.36	39.18
Lane Group LOS	C	C	B	C	C	C	B	B	B	B	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.43	7.22	2.02	0.98	5.05	5.78	1.04	2.87	2.65	1.74	10.53
50th-Percentile Queue Length [ft]	60.69	180.52	50.46	24.50	126.13	144.53	25.92	71.75	66.26	43.61	263.24
95th-Percentile Queue Length [veh]	4.37	11.63	3.63	1.76	8.73	9.72	1.87	5.17	4.77	3.14	15.85
95th-Percentile Queue Length [ft]	109.25	290.69	90.83	44.09	218.22	243.11	46.66	129.14	119.27	78.49	396.28

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.76	26.92	17.89	33.15	25.94	28.52	17.46	19.47	19.57	14.36	39.18	39.18
Movement LOS	C	C	B	C	C	C	B	B	B	B	D	D
d_A, Approach Delay [s/veh]	26.48			26.55			19.09			32.92		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	26.64											
Intersection LOS	C											
Intersection V/C	0.714											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.507

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	188	915	188	77	671	80	136	209	247	76	144	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	54	0	0	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	78	0	0	56	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	1003	188	77	781	80	136	209	248	76	144	80
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	264	49	20	206	21	36	55	65	20	38	21
Total Analysis Volume [veh/h]	198	1056	198	81	822	84	143	220	261	80	152	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	30	0	10	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	8	33	33	6	32	32	25	17	17	25	16	16
g / C, Green / Cycle	0.11	0.48	0.48	0.09	0.45	0.45	0.35	0.24	0.24	0.35	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.26	0.26	0.03	0.19	0.19	0.12	0.13	0.18	0.08	0.07	0.08
s, saturation flow rate [veh/h]	3101	3192	1544	3101	3192	1598	1212	1676	1482	1040	1676	1547
c, Capacity [veh/h]	344	1517	734	274	1445	724	488	397	351	358	372	343
d1, Uniform Delay [s]	29.55	13.11	13.11	29.86	12.92	12.94	18.88	23.47	24.75	18.97	22.82	22.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.52	1.48	3.04	0.59	0.89	1.78	0.33	1.21	3.13	0.31	0.49	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

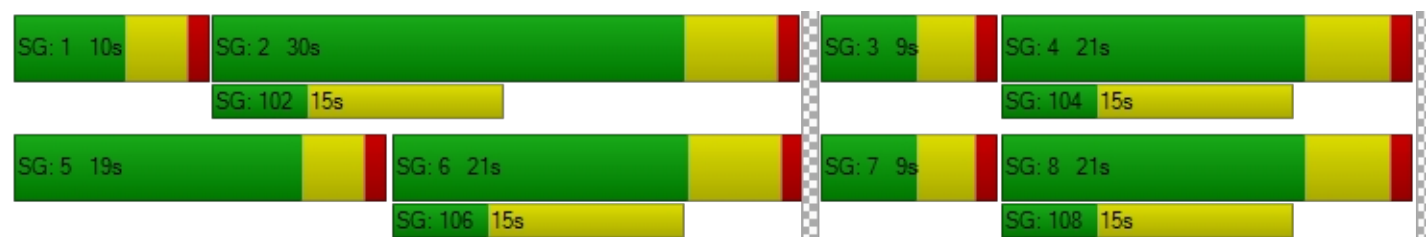
X, volume / capacity	0.58	0.56	0.56	0.30	0.42	0.42	0.29	0.55	0.74	0.22	0.32	0.34
d, Delay for Lane Group [s/veh]	31.06	14.59	16.14	30.45	13.81	14.72	19.22	24.68	27.88	19.28	23.31	23.49
Lane Group LOS	C	B	B	C	B	B	B	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.53	4.12	4.31	0.61	2.80	3.00	1.65	3.05	3.95	0.89	1.57	1.54
50th-Percentile Queue Length [ft]	38.13	103.07	107.67	15.29	70.01	75.01	41.32	76.16	98.74	22.33	39.27	38.48
95th-Percentile Queue Length [veh]	2.75	7.42	7.71	1.10	5.04	5.40	2.98	5.48	7.11	1.61	2.83	2.77
95th-Percentile Queue Length [ft]	68.63	185.52	192.76	27.52	126.02	135.01	74.38	137.09	177.73	40.20	70.68	69.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.06	14.90	16.14	30.45	14.05	14.72	19.22	24.68	27.88	19.28	23.35	23.49
Movement LOS	C	B	B	C	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	17.27			15.46			24.76			22.36		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.60											
Intersection LOS	B											
Intersection V/C	0.507											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.348

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	372	670	219	34	212	27	23	117	84	71	254	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	7	2	0	39	0	0	0	6	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	2	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	7	383	0	0	183	0	0	0	10	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	380	1062	221	34	436	27	23	117	100	81	254	40
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	279	58	9	115	7	6	31	26	21	67	11
Total Analysis Volume [veh/h]	400	1118	233	36	459	28	24	123	105	85	267	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	4.8	3.2	4.8	4.8	3.0	4.4	4.4	3.0	4.4	4.4
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	14	25	25	10	21	21	14	26	26	9	21	21
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	10	0	10	10
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	12	43	51	5	36	41	4	8	22	6	11	17
g / C, Green / Cycle	0.17	0.61	0.73	0.07	0.51	0.59	0.06	0.12	0.32	0.09	0.15	0.25
(v / s)_i Volume / Saturation Flow Rate	0.13	0.24	0.16	0.01	0.10	0.02	0.01	0.04	0.07	0.03	0.08	0.03
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	525	2782	995	210	2318	803	173	383	408	276	489	311
d1, Uniform Delay [s]	27.73	7.08	3.81	30.79	9.44	6.81	31.46	28.19	19.24	29.88	27.39	22.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.32	0.43	0.55	0.38	0.19	0.02	0.36	0.48	0.33	0.63	0.95	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.76	0.40	0.23	0.17	0.20	0.03	0.14	0.32	0.26	0.31	0.55	0.14
d, Delay for Lane Group [s/veh]	30.06	7.51	4.37	31.17	9.63	6.83	31.82	28.67	19.57	30.50	28.34	22.25
Lane Group LOS	C	A	A	C	A	A	C	C	B	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.11	2.20	0.86	0.28	1.10	0.15	0.19	0.91	1.23	0.65	1.98	0.53
50th-Percentile Queue Length [ft]	77.81	55.10	21.38	7.02	27.47	3.77	4.76	22.68	30.82	16.32	49.48	13.28
95th-Percentile Queue Length [veh]	5.60	3.97	1.54	0.51	1.98	0.27	0.34	1.63	2.22	1.18	3.56	0.96
95th-Percentile Queue Length [ft]	140.05	99.18	38.48	12.63	49.45	6.78	8.57	40.82	55.48	29.38	89.06	23.90

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.06	7.51	4.37	31.17	9.63	6.83	31.82	28.67	19.57	30.50	28.34	22.25
Movement LOS	C	A	A	C	A	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	12.24			10.96			25.18			28.16		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.28											
Intersection LOS	B											
Intersection V/C	0.348											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	279	831	0	0	803	454	0	0	0	450	0	398
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	4	0	0	22	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	17	4	0	0	3	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	86	16	0	0	43	0	0	0	0	272	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	389	855	0	0	871	454	0	0	0	722	0	398
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	102	225	0	0	229	119	0	0	0	190	0	105
Total Analysis Volume [veh/h]	409	900	0	0	917	478	0	0	0	760	0	419
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	0	4	0
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	12	39	0	0	27	0	0	0	0	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	0	10	0
Rest In Walk		No			No							No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	No			No							No	
Pedestrian Recall	No	No			No							No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	10	37	25	25		19	19	19
g / C, Green / Cycle	0.17	0.62	0.42	0.42		0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.13	0.28	0.29	0.34		0.25	0.25	0.28
s, saturation flow rate [veh/h]	3101	3192	3192	1425		1597	1584	1425
c, Capacity [veh/h]	517	1968	1330	594		506	502	451
d1, Uniform Delay [s]	24.00	6.14	14.32	15.36		18.58	18.63	19.34
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	2.77	0.77	2.94	11.11		2.62	2.73	5.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

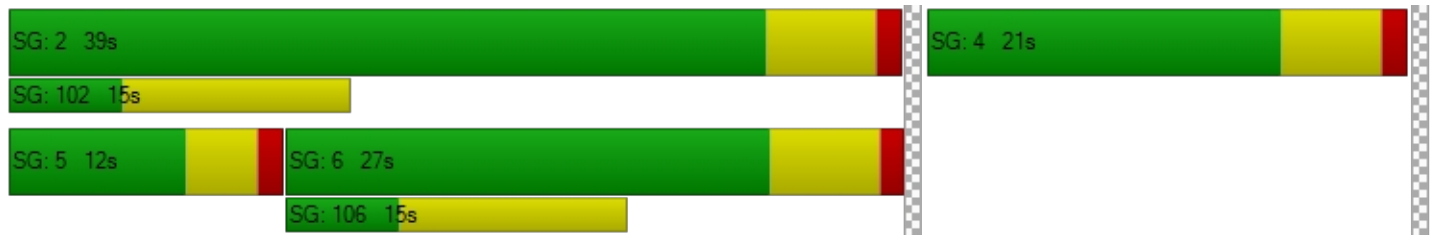
X, volume / capacity	0.79	0.46	0.69	0.81		0.78	0.78	0.87
d, Delay for Lane Group [s/veh]	26.77	6.91	17.27	26.47		21.20	21.36	25.27
Lane Group LOS	C	A	B	C		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	2.68	2.12	4.65	6.42		4.56	4.59	5.11
50th-Percentile Queue Length [ft]	67.12	53.05	116.27	160.62		114.12	114.71	127.81
95th-Percentile Queue Length [veh]	4.83	3.82	8.19	10.58		8.07	8.10	8.82
95th-Percentile Queue Length [ft]	120.81	95.49	204.69	264.55		201.71	202.54	220.52

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.77	6.91	0.00	0.00	17.27	26.47	0.00	0.00	0.00	21.28	21.36	25.03
Movement LOS	C	A			B	C				C	C	C
d_A, Approach Delay [s/veh]	13.11			20.42			0.00			22.61		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	18.62											
Intersection LOS	B											
Intersection V/C	0.743											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	37.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.936

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							+					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	715	478	273	957	0	390	2	278	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	22	0	0	0	22	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	3	0	0	0	13	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	103	49	0	314	0	0	0	321	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	850	527	273	1296	0	390	2	634	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	224	139	72	341	0	103	1	167	0	0	0
Total Analysis Volume [veh/h]	0	895	555	287	1364	0	411	2	667	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	32	0	10	42	0	0	38	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C	
C, Cycle Length [s]	80	80	80	80	80	80	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	30	30	8	40	36	36	
g / C, Green / Cycle	0.38	0.38	0.10	0.50	0.45	0.45	
(v / s)_i Volume / Saturation Flow Rate	0.28	0.37	0.09	0.43	0.26	0.47	
s, saturation flow rate [veh/h]	3192	1482	3101	3192	1597	1426	
c, Capacity [veh/h]	1197	556	310	1596	718	642	
d1, Uniform Delay [s]	21.71	24.98	35.70	17.46	16.29	22.00	
k, delay calibration	0.50	0.50	0.11	0.50	0.18	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.29	37.85	11.59	6.07	1.22	47.17	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

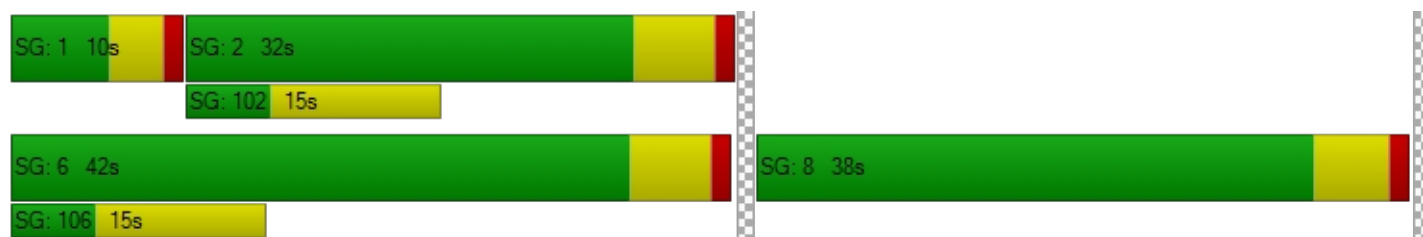
X, volume / capacity	0.75	1.00	0.93	0.85	0.57	1.04	
d, Delay for Lane Group [s/veh]	26.01	62.83	47.30	23.53	17.51	69.17	
Lane Group LOS	C	E	D	C	B	F	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	7.28	15.20	3.13	10.60	5.16	18.77	
50th-Percentile Queue Length [ft]	181.88	380.12	78.35	265.06	129.00	469.24	
95th-Percentile Queue Length [veh]	11.70	21.60	5.64	15.94	8.89	26.67	
95th-Percentile Queue Length [ft]	292.47	539.99	141.04	398.56	222.13	666.86	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	26.01	62.83	47.30	23.53	0.00	17.51	69.17	69.17	0.00	0.00	0.00
Movement LOS		C	E	D	C		B	E	F			
d_A, Approach Delay [s/veh]	40.10			27.66			49.51			0.00		
Approach LOS	D			C			D			A		
d_I, Intersection Delay [s/veh]	37.62											
Intersection LOS	D											
Intersection V/C	0.936											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	22.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.838

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	199	981	0	0	604	445	0	0	0	182	1	430
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	10	0	0	55	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	68	78	0	0	56	0	0	0	0	24	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	291	1069	0	0	715	445	0	0	0	206	1	430
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	281	0	0	188	117	0	0	0	54	0	113
Total Analysis Volume [veh/h]	306	1125	0	0	753	468	0	0	0	217	1	453
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	0	4	0
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	14	38	0	0	24	0	0	0	0	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	0	10	0
Rest In Walk		No			No							No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	No			No							No	
Pedestrian Recall	No	No			No							No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	12	36	22	22		20	20
g / C, Green / Cycle	0.20	0.60	0.37	0.37		0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.19	0.35	0.24	0.33		0.14	0.32
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	319	1915	1170	523		532	475
d1, Uniform Delay [s]	23.75	7.41	15.75	17.92		15.44	19.55
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	15.38	1.33	2.73	20.57		0.51	16.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

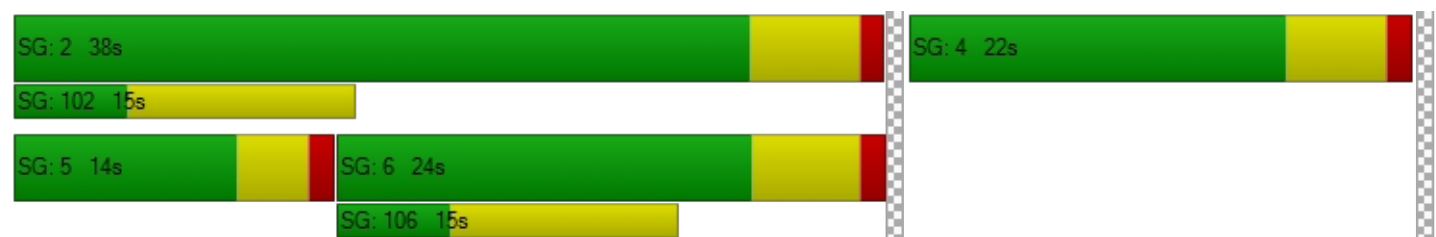
X, volume / capacity	0.96	0.59	0.64	0.90		0.41	0.95
d, Delay for Lane Group [s/veh]	39.13	8.74	18.48	38.49		15.95	35.68
Lane Group LOS	D	A	B	D		B	D
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	5.06	3.05	3.89	7.86		2.04	7.29
50th-Percentile Queue Length [ft]	126.54	76.19	97.20	196.42		50.93	182.26
95th-Percentile Queue Length [veh]	8.75	5.49	7.00	12.45		3.67	11.72
95th-Percentile Queue Length [ft]	218.78	137.14	174.96	311.34		91.68	292.97

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.13	8.74	0.00	0.00	18.48	38.49	0.00	0.00	0.00	15.95	15.95	35.68
Movement LOS	D	A			B	D				B	B	D
d_A, Approach Delay [s/veh]	15.24			26.15			0.00			29.27		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	22.08											
Intersection LOS	C											
Intersection V/C	0.838											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	36.2
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.902

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑			←↑↑			↑↑					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	578	242	251	543	0	597	0	148	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	34	0	0	55	0	0	0	143	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	146	38	0	80	0	0	0	42	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	758	280	251	678	0	597	0	333	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	199	74	66	178	0	157	0	88	0	0	0
Total Analysis Volume [veh/h]	0	798	295	264	714	0	628	0	351	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	23	0	12	35	0	0	25	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	21	21	10	33	23	23	
g / C, Green / Cycle	0.35	0.35	0.17	0.55	0.38	0.38	
(v / s)_i Volume / Saturation Flow Rate	0.33	0.34	0.17	0.22	0.39	0.25	
s, saturation flow rate [veh/h]	1676	1592	1597	3192	1597	1425	
c, Capacity [veh/h]	587	557	266	1756	612	546	
d1, Uniform Delay [s]	18.81	19.30	24.96	7.83	18.50	15.14	
k, delay calibration	0.50	0.50	0.11	0.50	0.29	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	23.60	33.70	23.82	0.70	34.73	1.27	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.93	0.98	0.99	0.41	1.03	0.64	
d, Delay for Lane Group [s/veh]	42.41	53.00	48.78	8.53	53.23	16.41	
Lane Group LOS	D	D	D	A	F	B	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	9.92	11.45	5.03	1.98	12.79	3.42	
50th-Percentile Queue Length [ft]	248.10	286.34	125.66	49.51	319.83	85.62	
95th-Percentile Queue Length [veh]	15.09	17.00	8.70	3.56	18.98	6.16	
95th-Percentile Queue Length [ft]	377.26	425.10	217.58	89.12	474.48	154.11	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	45.75	53.00	48.78	8.53	0.00	53.23	53.23	16.41	0.00	0.00	0.00
Movement LOS		D	D	D	A		F	D	B			
d_A, Approach Delay [s/veh]	47.70			19.39			40.03			0.00		
Approach LOS	D			B			D			A		
d_I, Intersection Delay [s/veh]	36.16											
Intersection LOS	D											
Intersection V/C	0.902											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.631

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	476	1012	0	0	279	104	0	0	0	253	2	383
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	55	0	0	0	0	123	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	2	0	0	0	0	11	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	218	444	0	0	247	0	0	0	0	201	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	694	1468	0	0	583	104	0	0	0	588	2	383
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	183	386	0	0	153	27	0	0	0	155	1	101
Total Analysis Volume [veh/h]	731	1545	0	0	614	109	0	0	0	619	2	403
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	0	4	0
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	22	37	0	0	15	0	0	0	0	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	0	10	0
Rest In Walk		No			No							No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	No			No							No	
Pedestrian Recall	No	No			No							No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	C		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	17	37	18	18		19	19	19
g / C, Green / Cycle	0.29	0.62	0.30	0.30		0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.24	0.34	0.15	0.16		0.21	0.22	0.24
s, saturation flow rate [veh/h]	3101	4567	3192	1553		1597	1563	1425
c, Capacity [veh/h]	897	2841	956	465		497	486	443
d1, Uniform Delay [s]	19.82	6.47	17.34	17.43		18.11	18.21	18.72
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	1.86	0.75	1.90	4.09		1.70	1.86	2.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

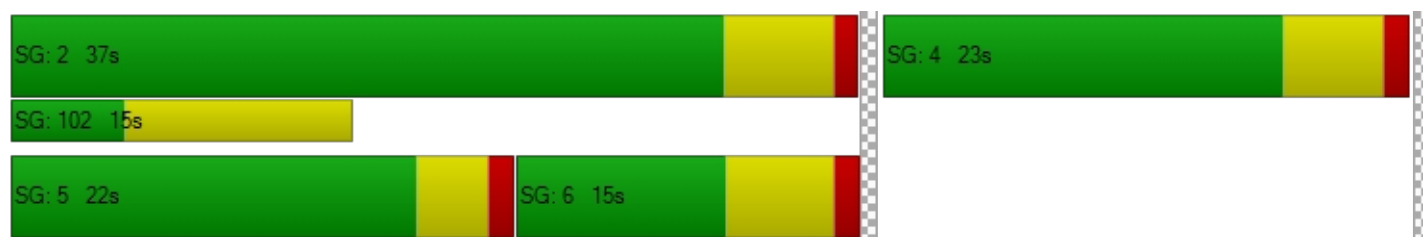
X, volume / capacity	0.81	0.54	0.50	0.52		0.69	0.70	0.77
d, Delay for Lane Group [s/veh]	21.68	7.22	19.24	21.52		19.80	20.07	21.57
Lane Group LOS	C	A	B	C		B	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	4.30	2.49	2.61	2.90		3.77	3.81	4.01
50th-Percentile Queue Length [ft]	107.60	62.36	65.36	72.55		94.34	95.27	100.26
95th-Percentile Queue Length [veh]	7.71	4.49	4.71	5.22		6.79	6.86	7.22
95th-Percentile Queue Length [ft]	192.65	112.25	117.64	130.60		169.81	171.48	180.47

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	21.68	7.22	0.00	0.00	19.73	21.52	0.00	0.00	0.00	19.92	20.07	21.34
Movement LOS	C	A			B	C				B	C	C
d_A, Approach Delay [s/veh]	11.87			20.00			0.00			20.48		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	15.52											
Intersection LOS	B											
Intersection V/C	0.631											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.802

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	200.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	1157	337	76	451	0	319	1	295	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	28	0	178	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	14	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	654	166	0	445	0	0	4	192	0	6	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1823	545	76	1087	0	319	5	487	0	6	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	480	143	20	286	0	84	1	128	0	2	0
Total Analysis Volume [veh/h]	0	1919	574	80	1144	0	336	5	513	0	6	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	25	0	35	60	0	0	20	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	80	80	80	80	80	80	80	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	50	50	6	58	18	18	18	
g / C, Green / Cycle	0.62	0.62	0.08	0.73	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.52	0.56	0.05	0.25	0.18	0.19	0.20	
s, saturation flow rate [veh/h]	3192	1494	1597	4567	1597	1452	1425	
c, Capacity [veh/h]	1972	923	131	3311	359	327	321	
d1, Uniform Delay [s]	12.18	13.15	35.48	4.04	29.44	29.80	29.87	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.59	13.49	4.54	0.29	4.60	6.67	7.22	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

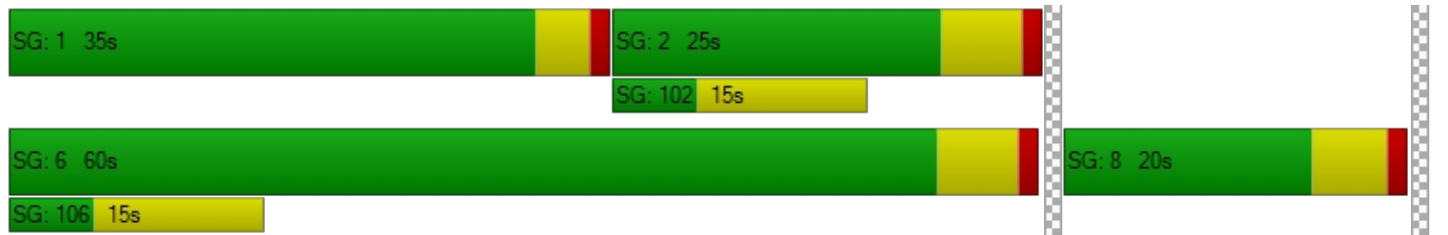
X, volume / capacity	0.84	0.90	0.61	0.35	0.82	0.86	0.87	
d, Delay for Lane Group [s/veh]	16.77	26.64	40.02	4.32	34.04	36.46	37.09	
Lane Group LOS	B	C	D	A	C	D	D	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh]	10.14	13.05	1.60	1.50	5.46	5.45	5.46	
50th-Percentile Queue Length [ft]	253.56	326.37	40.11	37.47	136.40	136.27	136.44	
95th-Percentile Queue Length [veh]	15.37	18.98	2.89	2.70	9.29	9.28	9.29	
95th-Percentile Queue Length [ft]	384.13	474.50	72.19	67.45	232.17	231.99	232.22	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	18.09	26.64	40.02	4.32	0.00	34.39	36.46	36.81	0.00	0.00	0.00
Movement LOS		B	C	D	A		C	D	D			
d_A, Approach Delay [s/veh]	20.06			6.66			35.83			0.00		
Approach LOS	C			A			D			A		
d_I, Intersection Delay [s/veh]	19.42											
Intersection LOS	B											
Intersection V/C	0.802											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.688

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TTT			TTTTT			TTT			TTT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	121	840	54	152	899	47	126	265	93	61	278	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	1	42	0	0	0	3	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	164	0	0	636	0	0	0	84	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	1035	54	153	1593	47	126	265	180	61	278	183
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	272	14	40	419	12	33	70	47	16	73	48
Total Analysis Volume [veh/h]	127	1089	57	161	1677	49	133	279	189	64	293	193
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	29	0	10	21	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	28	28	7	27	27	19	19	19	19	19	19
g / C, Green / Cycle	0.13	0.47	0.47	0.11	0.45	0.45	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.09	0.27	0.27	0.06	0.41	0.04	0.18	0.17	0.17	0.09	0.17	0.18
s, saturation flow rate [veh/h]	1416	2831	1449	2750	4050	1264	723	1487	1291	735	1487	1295
c, Capacity [veh/h]	186	1326	679	316	1830	571	231	471	409	238	471	410
d1, Uniform Delay [s]	24.85	11.58	11.58	24.96	15.39	9.38	26.13	16.82	16.88	23.15	16.93	17.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.34	1.79	3.48	1.27	8.75	0.30	2.25	0.92	1.10	0.60	0.99	1.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

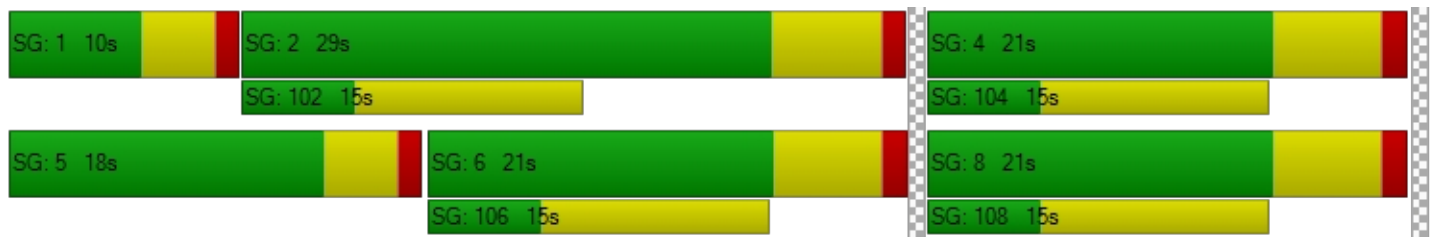
X, volume / capacity	0.68	0.57	0.57	0.51	0.92	0.09	0.57	0.53	0.54	0.27	0.55	0.56
d, Delay for Lane Group [s/veh]	29.19	13.37	15.05	26.23	24.14	9.68	28.38	17.73	17.98	23.75	17.92	18.22
Lane Group LOS	C	B	B	C	C	A	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	1.78	3.18	3.58	1.03	6.99	0.34	1.90	2.52	2.26	0.79	2.63	2.38
50th-Percentile Queue Length [ft]	44.54	79.62	89.50	25.80	174.81	8.53	47.46	62.98	56.43	19.66	65.71	59.46
95th-Percentile Queue Length [veh]	3.21	5.73	6.44	1.86	11.33	0.61	3.42	4.53	4.06	1.42	4.73	4.28
95th-Percentile Queue Length [ft]	80.17	143.32	161.10	46.45	283.22	15.36	85.43	113.36	101.57	35.38	118.27	107.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.19	13.88	15.05	26.23	24.14	9.68	28.38	17.76	17.98	23.75	17.96	18.22
Movement LOS	C	B	B	C	C	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	15.46			23.95			20.18			18.72		
Approach LOS	B			C			C			B		
d_I, Intersection Delay [s/veh]	20.25											
Intersection LOS	C											
Intersection V/C	0.688											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	19.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	51	423	11	94	380	92	153	207	44	9	181	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	34	1	0	198	0	0	0	1	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	182	0	0	123	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	639	12	94	701	92	153	207	45	13	181	168
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	168	3	25	184	24	40	54	12	3	48	44
Total Analysis Volume [veh/h]	55	673	13	99	738	97	161	218	47	14	191	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	16	27	0	12	23	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	6	32	32	7	33	33	10	20	20	25	13	13
g / C, Green / Cycle	0.08	0.46	0.46	0.10	0.48	0.48	0.14	0.28	0.28	0.36	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.03	0.20	0.20	0.06	0.25	0.25	0.10	0.08	0.08	0.01	0.11	0.12
s, saturation flow rate [veh/h]	1597	1676	1732	1597	1676	1675	1597	1676	1576	1105	1676	1425
c, Capacity [veh/h]	126	771	796	155	801	800	220	469	441	457	321	273
d1, Uniform Delay [s]	30.75	12.79	12.79	30.43	12.72	12.72	28.95	19.75	19.79	17.28	25.82	26.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.37	1.81	1.75	4.35	2.42	2.43	4.67	0.34	0.37	0.03	1.76	2.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

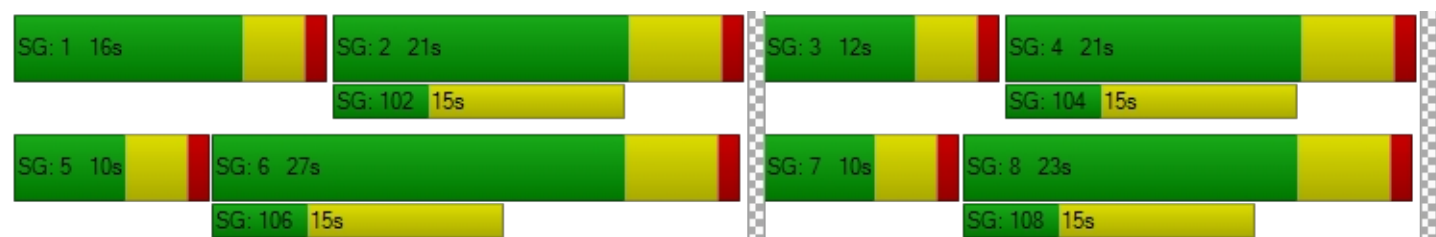
X, volume / capacity	0.44	0.44	0.44	0.64	0.52	0.52	0.73	0.29	0.29	0.03	0.59	0.65
d, Delay for Lane Group [s/veh]	33.12	14.60	14.54	34.79	15.14	15.15	33.62	20.09	20.15	17.31	27.58	28.71
Lane Group LOS	C	B	B	C	B	B	C	C	C	B	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.90	3.31	3.41	1.67	4.20	4.20	2.69	1.61	1.55	0.15	2.83	2.70
50th-Percentile Queue Length [ft]	22.51	82.76	85.23	41.64	105.00	104.92	67.25	40.34	38.79	3.69	70.68	67.49
95th-Percentile Queue Length [veh]	1.62	5.96	6.14	3.00	7.56	7.55	4.84	2.90	2.79	0.27	5.09	4.86
95th-Percentile Queue Length [ft]	40.52	148.96	153.41	74.95	188.99	188.85	121.04	72.62	69.83	6.64	127.23	121.49

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.12	14.57	14.54	34.79	15.14	15.15	33.62	20.11	20.15	17.31	27.58	28.71
Movement LOS	C	B	B	C	B	B	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	15.95			17.23			25.22			27.72		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.83											
Intersection LOS	B											
Intersection V/C	0.509											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	7.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.531

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	73	1127	11	49	434	11	19	2	13	22	8	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	38	0	0	178	0	0	0	6	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	16	0	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	790	0	0	662	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	1971	11	49	1287	11	19	2	19	24	8	87
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	519	3	13	339	3	5	1	5	6	2	23
Total Analysis Volume [veh/h]	78	2075	12	52	1355	12	20	2	20	25	8	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	10	21	0	0	29	0	0	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	42	42	5	41	41	7	7	7	7
g / C, Green / Cycle	0.10	0.70	0.70	0.09	0.69	0.69	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.43	0.43	0.03	0.28	0.28	0.02	0.01	0.02	0.07
s, saturation flow rate [veh/h]	1597	3192	1672	1597	3192	1669	1161	1502	1246	1442
c, Capacity [veh/h]	156	2234	1170	136	2195	1148	168	172	234	166
d1, Uniform Delay [s]	25.69	4.73	4.73	25.94	4.07	4.07	28.04	23.86	25.26	25.26
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.48	1.27	2.41	1.75	0.57	1.08	0.31	0.33	0.20	3.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

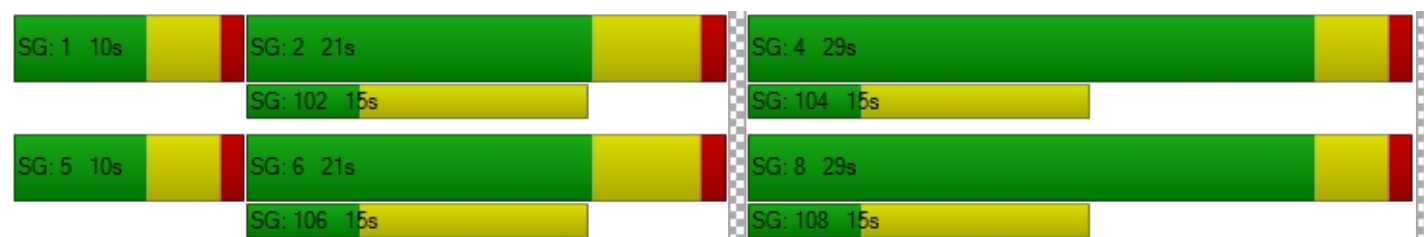
X, volume / capacity	0.50	0.61	0.61	0.38	0.41	0.41	0.12	0.13	0.11	0.60
d, Delay for Lane Group [s/veh]	28.16	6.00	7.14	27.69	4.64	5.15	28.36	24.19	25.46	28.78
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.07	2.36	2.85	0.71	1.33	1.55	0.27	0.27	0.31	1.39
50th-Percentile Queue Length [ft]	26.68	59.12	71.25	17.66	33.18	38.79	6.80	6.78	7.86	34.75
95th-Percentile Queue Length [veh]	1.92	4.26	5.13	1.27	2.39	2.79	0.49	0.49	0.57	2.50
95th-Percentile Queue Length [ft]	48.02	106.42	128.25	31.79	59.72	69.83	12.24	12.20	14.15	62.56

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.16	6.39	7.14	27.69	4.81	5.15	28.36	24.19	24.19	25.46	28.78	28.78
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	7.18			5.65			26.17			28.11		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.51											
Intersection LOS	A											
Intersection V/C	0.531											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	52	667	145	140	766	114	110	287	41	139	462	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	2	44	0	0	0	3	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	12	151	0	0	635	1	0	163	47	0	172	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	849	145	142	1461	115	110	450	91	139	634	91
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	223	38	37	384	30	29	118	24	37	167	24
Total Analysis Volume [veh/h]	67	894	153	149	1538	121	116	474	96	146	667	96
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	6	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	4.8	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	11	22	22	14	26	0	12	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	10	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	20	20	8	23	32	7	25	8	26	26
g / C, Green / Cycle	0.08	0.29	0.29	0.12	0.33	0.46	0.10	0.35	0.12	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.04	0.18	0.10	0.08	0.30	0.08	0.07	0.30	0.08	0.21	0.21
s, saturation flow rate [veh/h]	1774	5074	1583	1774	5074	1583	1774	1881	1774	1863	1855
c, Capacity [veh/h]	150	1479	462	215	1666	681	186	664	213	686	683
d1, Uniform Delay [s]	30.49	21.32	19.45	29.50	22.65	12.29	30.01	21.04	29.52	17.59	17.59
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.24	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.09	1.84	1.92	3.96	10.03	0.12	3.40	7.01	3.86	0.71	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

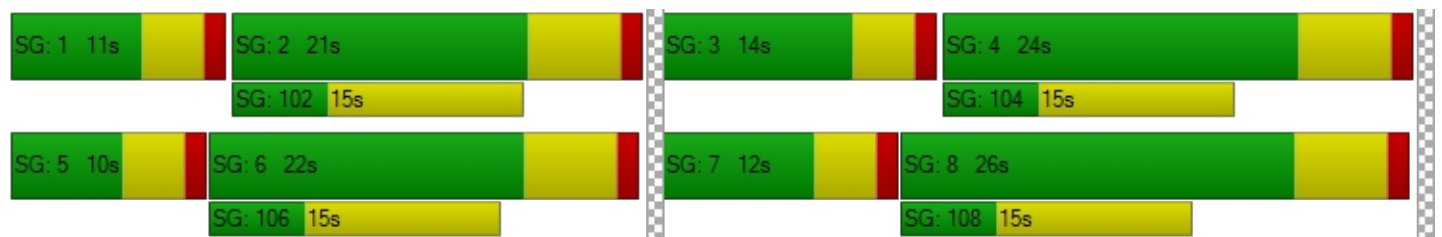
X, volume / capacity	0.45	0.60	0.33	0.69	0.92	0.18	0.62	0.86	0.68	0.56	0.56
d, Delay for Lane Group [s/veh]	32.58	23.16	21.37	33.46	32.68	12.42	33.40	28.05	33.39	18.30	18.30
Lane Group LOS	C	C	C	C	C	B	C	C	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.09	4.03	2.01	2.47	8.69	1.04	1.92	8.85	2.42	4.43	4.42
50th-Percentile Queue Length [ft]	27.37	100.67	50.34	61.83	217.29	25.94	48.09	221.29	60.50	110.84	110.41
95th-Percentile Queue Length [veh]	1.97	7.25	3.62	4.45	13.53	1.87	3.46	13.73	4.36	7.89	7.86
95th-Percentile Queue Length [ft]	49.26	181.20	90.62	111.29	338.16	46.70	86.56	343.27	108.91	197.17	196.57

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.58	23.16	21.37	33.46	32.68	12.42	33.40	28.05	28.05	33.39	18.30	18.30
Movement LOS	C	C	C	C	C	B	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	23.48			31.39			28.95			20.73		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.92											
Intersection LOS	C											
Intersection V/C	0.726											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	17.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.421

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵↶			↵			↵↶		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	37	208	0	0	214	156	106	0	18	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	35	1	0	204	0	0	0	2	6	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	13	0	18	33	0	0	164	0	0	174	31
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	256	1	18	451	156	106	164	20	6	174	31
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	67	0	5	119	41	28	43	5	2	46	8
Total Analysis Volume [veh/h]	40	269	1	19	475	164	112	173	21	6	183	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	23	0	16	27	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	21	21	21	21	21	7	30	3	26	26
g / C, Green / Cycle	0.35	0.35	0.35	0.35	0.35	0.11	0.50	0.05	0.44	0.44
(v / s)_j Volume / Saturation Flow Rate	0.05	0.16	0.02	0.28	0.12	0.07	0.12	0.00	0.07	0.07
s, saturation flow rate [veh/h]	824	1675	994	1676	1425	1597	1645	1597	1676	1590
c, Capacity [veh/h]	183	586	327	587	499	179	827	76	734	696
d1, Uniform Delay [s]	26.90	15.11	19.16	17.69	14.32	25.44	8.41	27.33	10.14	10.16
k, delay calibration	0.11	0.11	0.11	0.13	0.11	0.11	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.59	0.56	0.07	3.33	0.38	3.56	0.67	0.44	0.43	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.22	0.46	0.06	0.81	0.33	0.63	0.23	0.08	0.15	0.15
d, Delay for Lane Group [s/veh]	27.49	15.67	19.24	21.01	14.70	29.00	9.08	27.77	10.57	10.63
Lane Group LOS	C	B	B	C	B	C	A	C	B	B
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.54	2.50	0.20	5.51	1.44	1.56	1.24	0.08	0.79	0.78
50th-Percentile Queue Length [ft]	13.43	62.62	4.94	137.76	36.05	39.02	30.92	2.12	19.71	19.45
95th-Percentile Queue Length [veh]	0.97	4.51	0.36	9.36	2.60	2.81	2.23	0.15	1.42	1.40
95th-Percentile Queue Length [ft]	24.17	112.71	8.89	234.00	64.89	70.24	55.66	3.82	35.47	35.01

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.49	15.67	15.67	19.24	21.01	14.70	29.00	9.08	9.08	27.77	10.59	10.63
Movement LOS	C	B	B	B	C	B	C	A	A	C	B	B
d_A, Approach Delay [s/veh]	17.20			19.39			16.37			11.06		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	17.08											
Intersection LOS	B											
Intersection V/C	0.421											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	793	58	78	245	0	0	0	0	57	0	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	39	0	0	186	0	0	0	6	5	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	16	0	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	45	725	95	47	730	58	136	238	77	47	91	32
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	1573	153	125	1174	58	136	238	83	109	91	181
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	414	40	33	309	15	36	63	22	29	24	48
Total Analysis Volume [veh/h]	48	1656	161	132	1236	61	143	251	87	115	96	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	3.6
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	22	0	10	22	0	17	21	0	17	21	10
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	36	36	8	38	38	9	11	11	8	9	19
g / C, Green / Cycle	0.08	0.51	0.51	0.11	0.55	0.55	0.13	0.15	0.15	0.11	0.13	0.27
(v / s)_i Volume / Saturation Flow Rate	0.02	0.38	0.38	0.04	0.27	0.27	0.09	0.08	0.06	0.07	0.03	0.13
s, saturation flow rate [veh/h]	3101	3192	1602	3101	3192	1636	1597	3192	1482	1597	3192	1425
c, Capacity [veh/h]	250	1636	821	354	1743	894	203	482	224	172	419	338
d1, Uniform Delay [s]	30.04	13.38	13.41	28.68	9.86	9.86	29.27	27.39	26.81	30.01	27.23	23.52
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	3.03	5.97	0.65	1.00	1.93	4.37	0.87	1.10	4.40	0.28	1.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

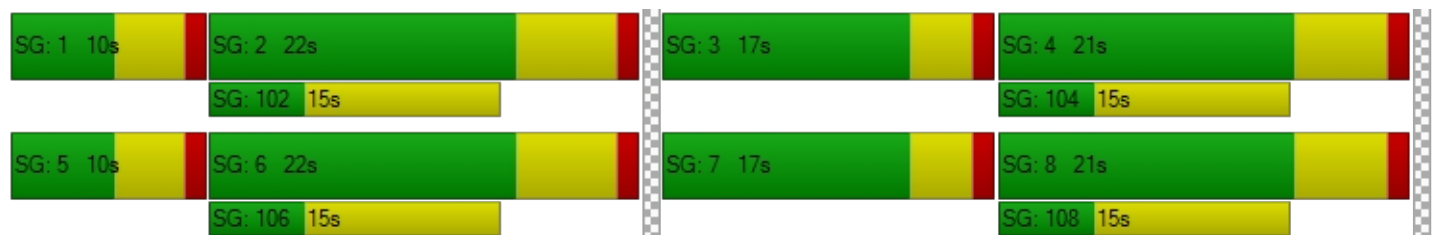
X, volume / capacity	0.19	0.74	0.74	0.37	0.49	0.49	0.70	0.52	0.39	0.67	0.23	0.57
d, Delay for Lane Group [s/veh]	30.41	16.41	19.38	29.33	10.85	11.79	33.64	28.26	27.91	34.41	27.50	25.01
Lane Group LOS	C	B	B	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.37	6.65	7.37	0.99	3.45	3.77	2.39	1.85	1.29	1.95	0.69	2.68
50th-Percentile Queue Length [ft]	9.18	166.17	184.37	24.73	86.22	94.23	59.71	46.34	32.17	48.68	17.18	66.93
95th-Percentile Queue Length [veh]	0.66	10.88	11.83	1.78	6.21	6.78	4.30	3.34	2.32	3.50	1.24	4.82
95th-Percentile Queue Length [ft]	16.53	271.88	295.71	44.51	155.20	169.61	107.48	83.42	57.90	87.62	30.92	120.47

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.41	17.21	19.38	29.33	11.14	11.79	33.64	28.26	27.91	34.41	27.50	25.01
Movement LOS	C	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	17.74			12.85			29.80			28.29		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.47											
Intersection LOS	B											
Intersection V/C	0.634											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	55.5
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.025

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	783	108	29	852	64	82	127	48	71	136	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	2	45	0	0	0	3	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	19	163	0	0	682	0	0	237	22	0	263	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	977	108	31	1595	64	82	364	73	71	399	27
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	257	28	8	420	17	22	96	19	19	105	7
Total Analysis Volume [veh/h]	71	1028	114	33	1679	67	86	383	77	75	420	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	20	38	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	39	39	5	38	38	30	30	30	30
g / C, Green / Cycle	0.08	0.49	0.49	0.06	0.47	0.47	0.38	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.32	0.08	0.02	0.53	0.05	0.10	0.23	0.05	0.45
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	845	1676	1425	1151
c, Capacity [veh/h]	123	1560	696	98	1509	674	91	629	534	483
d1, Uniform Delay [s]	35.64	15.42	11.37	35.99	21.09	11.67	40.00	20.25	16.52	27.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.16	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.18	2.20	0.51	2.01	60.58	0.29	32.95	1.45	0.12	64.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.58	0.66	0.16	0.34	1.11	0.10	0.95	0.61	0.14	1.08
d, Delay for Lane Group [s/veh]	39.82	17.62	11.87	38.00	81.67	11.96	72.95	21.70	16.64	92.03
Lane Group LOS	D	B	B	D	F	B	E	C	B	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.42	6.55	1.09	0.65	24.68	0.64	2.45	5.49	0.88	17.62
50th-Percentile Queue Length [ft]	35.48	163.72	27.26	16.14	617.07	16.10	61.33	137.27	21.93	440.47
95th-Percentile Queue Length [veh]	2.55	10.75	1.96	1.16	35.46	1.16	4.42	9.33	1.58	25.81
95th-Percentile Queue Length [ft]	63.86	268.64	49.06	29.05	886.48	28.99	110.39	233.35	39.47	645.26

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.82	17.62	11.87	38.00	81.67	11.96	72.95	21.70	16.64	92.03	92.03	92.03
Movement LOS	D	B	B	D	F	B	E	C	B	F	F	F
d_A, Approach Delay [s/veh]	18.38			78.23			29.06			92.03		
Approach LOS	B			E			C			F		
d_I, Intersection Delay [s/veh]	55.52											
Intersection LOS	E											
Intersection V/C	1.025											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type:	All-way stop	Delay (sec / veh):	127.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.422

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	243	5	28	215	24	56	50	20	7	48	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	37	0	0	212	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	13	6	0	33	0	0	245	0	13	268	0
Total Hourly Volume [veh/h]	50	293	11	28	460	24	56	295	22	20	316	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	77	3	7	121	6	15	78	6	5	83	4
Total Analysis Volume [veh/h]	53	308	12	29	484	25	59	311	23	21	333	15
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	377	538	393	377
Degree of Utilization, x	0.99	1.42	1.04	0.98

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	11.59	27.34	13.12	11.29
95th-Percentile Queue Length [ft]	289.72	683.50	328.11	282.24
Approach Delay [s/veh]	75.53	230.41	88.95	72.99
Approach LOS	F	F	F	F
Intersection Delay [s/veh]	127.93			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	220.00	100.00	970.00	200.00	100.00	100.00	30.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	1	950	16	30	401	3	10	3	0	37	4	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	40	0	0	196	0	0	0	0	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	16	0	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	82	709	66	28	682	31	59	141	101	23	85	79
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	1715	82	58	1292	34	69	144	101	64	89	162
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	451	22	15	340	9	18	38	27	17	23	43
Total Analysis Volume [veh/h]	87	1805	86	61	1360	36	73	152	106	67	94	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	10	22	0	27	38	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	45	45	6	44	44	6	15	15	6	14	14
g / C, Green / Cycle	0.09	0.56	0.56	0.08	0.55	0.55	0.08	0.18	0.18	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.39	0.39	0.04	0.42	0.42	0.05	0.05	0.07	0.04	0.06	0.12
s, saturation flow rate [veh/h]	1597	3192	1638	1597	1676	1661	1597	3192	1482	1597	1676	1425
c, Capacity [veh/h]	141	1794	921	126	927	919	127	583	271	121	301	256
d1, Uniform Delay [s]	35.17	12.60	12.62	35.27	13.73	13.75	35.52	28.05	28.77	35.64	28.54	30.61
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.35	2.26	4.38	2.85	5.71	5.81	4.06	0.23	0.92	3.86	0.59	3.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

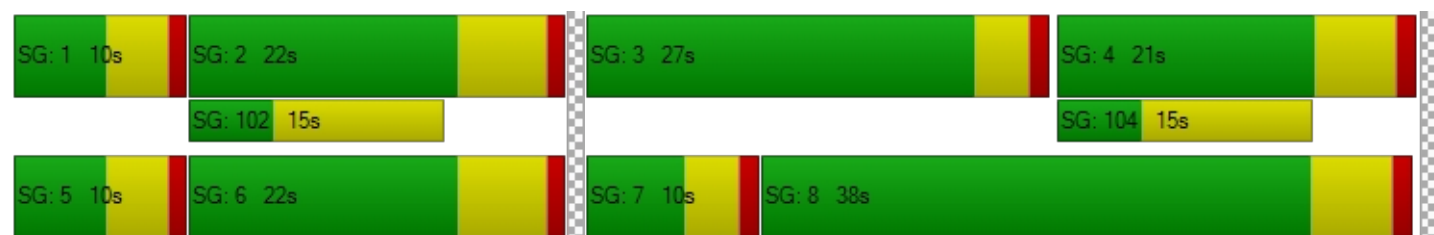
X, volume / capacity	0.62	0.70	0.70	0.48	0.76	0.76	0.58	0.26	0.39	0.55	0.31	0.67
d, Delay for Lane Group [s/veh]	39.52	14.86	17.00	38.12	19.44	19.56	39.58	28.29	29.69	39.50	29.13	33.63
Lane Group LOS	D	B	B	D	B	B	D	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.73	7.09	7.85	1.19	9.38	9.35	1.45	1.20	1.76	1.33	1.53	3.11
50th-Percentile Queue Length [ft]	43.19	177.34	196.33	29.66	234.47	233.73	36.36	30.09	44.09	33.32	38.32	77.74
95th-Percentile Queue Length [veh]	3.11	11.46	12.45	2.14	14.40	14.36	2.62	2.17	3.17	2.40	2.76	5.60
95th-Percentile Queue Length [ft]	77.74	286.54	311.23	53.38	360.03	359.09	65.44	54.16	79.37	59.98	68.98	139.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.52	15.52	17.00	38.12	19.50	19.56	39.58	28.29	29.69	39.50	29.13	33.63
Movement LOS	D	B	B	D	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	16.64			20.28			31.23			33.54		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	20.48											
Intersection LOS	C											
Intersection V/C	0.639											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	31.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.815

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	185.00	100.00	50.00	165.00	100.00	165.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	98	775	10	13	831	144	155	52	66	30	145	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	48	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	24	180	0	0	704	0	0	6	30	0	14	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	986	10	13	1599	144	155	58	99	30	159	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	259	3	3	421	38	41	15	26	8	42	2
Total Analysis Volume [veh/h]	128	1038	11	14	1683	152	163	61	104	32	167	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	35	0	10	21	0	17	21	0	54	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	76	76	4	67	67	15	27	27	6	17
g / C, Green / Cycle	0.10	0.63	0.63	0.03	0.56	0.56	0.13	0.22	0.22	0.05	0.14
(v / s)_i Volume / Saturation Flow Rate	0.08	0.33	0.01	0.01	0.53	0.11	0.10	0.04	0.07	0.02	0.11
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1482	1597	1663
c, Capacity [veh/h]	168	2012	898	54	1786	797	200	372	329	75	239
d1, Uniform Delay [s]	52.26	12.15	8.26	56.48	24.63	13.03	51.16	37.71	39.08	55.59	49.14
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.05	0.95	0.02	2.47	11.44	0.53	7.92	0.21	0.55	3.76	4.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

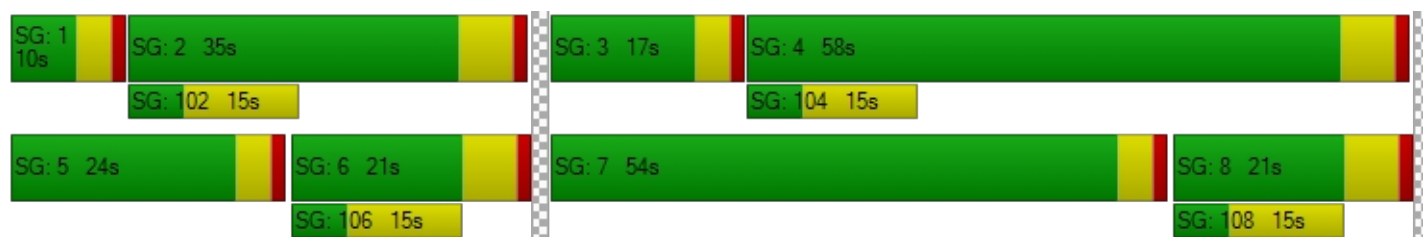
X, volume / capacity	0.76	0.52	0.01	0.26	0.94	0.19	0.82	0.16	0.32	0.42	0.73
d, Delay for Lane Group [s/veh]	59.31	13.09	8.28	58.96	36.06	13.56	59.08	37.92	39.63	59.35	53.41
Lane Group LOS	E	B	A	E	D	B	E	D	D	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	4.02	7.16	0.11	0.44	23.01	2.05	5.13	1.45	2.58	1.01	5.21
50th-Percentile Queue Length [ft]	100.40	179.12	2.64	11.12	575.31	51.15	128.20	36.28	64.41	25.19	130.34
95th-Percentile Queue Length [veh]	7.23	11.55	0.19	0.80	30.88	3.68	8.84	2.61	4.64	1.81	8.96
95th-Percentile Queue Length [ft]	180.72	288.87	4.75	20.02	771.99	92.08	221.04	65.30	115.93	45.34	223.96

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	59.31	13.09	8.28	58.96	36.06	13.56	59.08	37.92	39.63	59.35	53.41	53.41
Movement LOS	E	B	A	E	D	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	18.08			34.39			48.98			54.33		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	31.50											
Intersection LOS	C											
Intersection V/C	0.815											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	All-way stop	Delay (sec / veh):	18.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	65	219	6	21	175	44	34	14	16	7	42	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	38	0	0	213	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	10	19	0	1	45	0	0	6	0	0	13	0
Total Hourly Volume [veh/h]	75	276	6	22	433	44	34	20	16	7	55	22
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	73	2	6	114	12	9	5	4	2	14	6
Total Analysis Volume [veh/h]	79	291	6	23	456	46	36	21	17	7	58	23
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	656	689	537	549
Degree of Utilization, x	0.57	0.76	0.14	0.16

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	3.65	7.14	0.48	0.57
95th-Percentile Queue Length [ft]	91.32	178.51	11.88	14.18
Approach Delay [s/veh]	15.61	22.99	10.77	10.80
Approach LOS	C	C	B	B
Intersection Delay [s/veh]	18.52			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration	⇐⇐⇐			⇑⇑⇑			⇐⇑⇑⇑					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	524	1	323	0	660	194	44	1188	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	63	0	0	0	33	0	0	5	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	5	0	0	0	8	0	0	9	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	189	0	0	318	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	592	1	323	0	890	194	44	1520	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	156	0	85	0	234	51	12	400	0	0	0	0
Total Analysis Volume [veh/h]	623	1	340	0	937	204	46	1600	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	0	20	0	19	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	30	30	5	37
g / C, Green / Cycle	0.32	0.32	0.32	0.50	0.50	0.08	0.62
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.27	0.27	0.28	0.02	0.40
s, saturation flow rate [veh/h]	1416	1416	1264	2831	1358	2750	4050
c, Capacity [veh/h]	448	449	400	1412	678	232	2498
d1, Uniform Delay [s]	17.97	17.97	19.16	10.30	10.46	25.58	7.29
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.96	1.95	5.25	1.48	3.34	0.41	1.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

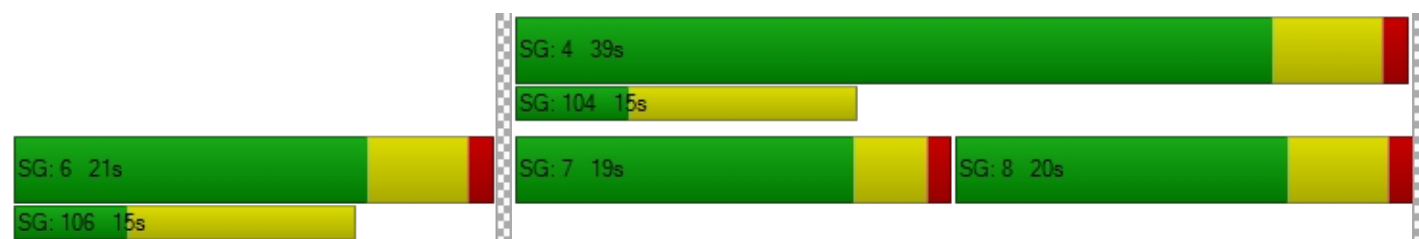
X, volume / capacity	0.70	0.70	0.85	0.54	0.56	0.20	0.64
d, Delay for Lane Group [s/veh]	19.92	19.92	24.42	11.78	13.80	25.99	8.56
Lane Group LOS	B	B	C	B	B	C	A
Critical Lane Group	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.47	3.47	4.33	2.88	3.26	0.29	2.98
50th-Percentile Queue Length [ft]	86.63	86.63	108.22	72.09	81.59	7.32	74.61
95th-Percentile Queue Length [veh]	6.24	6.24	7.74	5.19	5.87	0.53	5.37
95th-Percentile Queue Length [ft]	155.94	155.93	193.52	129.77	146.86	13.18	134.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	19.92	19.92	24.42	0.00	12.16	13.80	25.99	8.56	0.00	0.00	0.00	0.00
Movement LOS	B	B	C		B	B	C	A				
d_A, Approach Delay [s/veh]	21.51			12.45			9.05			0.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	13.29											
Intersection LOS	B											
Intersection V/C	0.664											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	59.7
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.942

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Base Volume Input [veh/h]	417	68	48	29	0	441	196	815	177	0	914	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	98	0	0	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	189	0	0	318	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	417	68	48	29	0	441	196	1116	177	0	1265	20
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	18	13	8	0	116	52	294	47	0	333	5
Total Analysis Volume [veh/h]	439	72	51	31	0	464	206	1175	186	0	1332	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.2	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	18	0	10	10	31	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No			No	No			No	
Maximum Recall		No		No			No	No			No	
Pedestrian Recall		No		No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	17	17	17	18	18	8	29	19	19
g / C, Green / Cycle	0.24	0.24	0.24	0.26	0.26	0.12	0.41	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.04	0.02	0.37	0.15	0.29	0.25	0.23
s, saturation flow rate [veh/h]	1416	1435	1264	1416	1264	1416	4050	4050	1471
c, Capacity [veh/h]	335	340	299	372	332	166	1681	1089	396
d1, Uniform Delay [s]	24.84	24.84	21.25	19.46	25.81	30.89	16.87	24.96	24.29
k, delay calibration	0.11	0.11	0.11	0.11	0.35	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.50	3.45	0.27	0.10	191.51	118.40	2.44	15.08	20.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

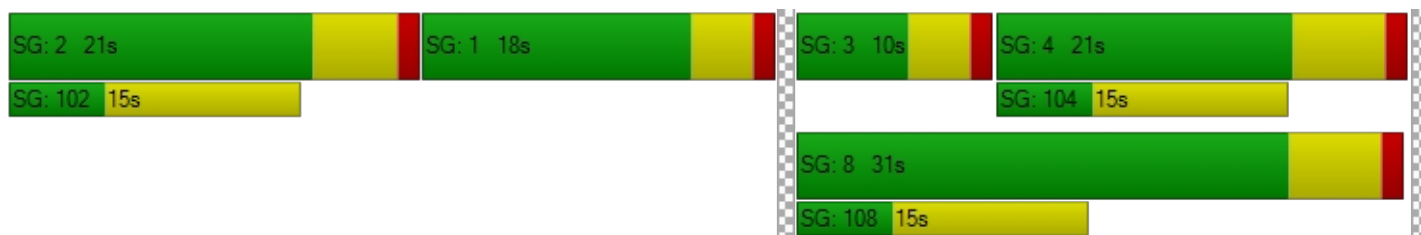
X, volume / capacity	0.76	0.76	0.17	0.08	1.40	1.24	0.70	0.93	0.86
d, Delay for Lane Group [s/veh]	28.35	28.29	21.51	19.55	217.32	149.29	19.32	40.03	44.72
Lane Group LOS	C	C	C	B	F	F	B	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	3.88	3.93	0.63	0.36	22.60	8.08	4.82	6.42	7.02
50th-Percentile Queue Length [ft]	97.09	98.26	15.84	8.96	565.03	201.98	120.46	160.55	175.39
95th-Percentile Queue Length [veh]	6.99	7.07	1.14	0.64	35.79	13.76	8.42	10.58	11.36
95th-Percentile Queue Length [ft]	174.77	176.86	28.51	16.12	894.82	343.97	210.46	264.45	283.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.32	28.29	21.51	19.55	0.00	217.32	149.29	19.32	0.00	0.00	41.15	44.72
Movement LOS	C	C	C	B		F	F	B			D	D
d_A, Approach Delay [s/veh]	27.70			204.93			38.70			41.21		
Approach LOS	C			F			D			D		
d_I, Intersection Delay [s/veh]	59.67											
Intersection LOS	E											
Intersection V/C	0.942											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	52	341	47	43	395	81	72	582	72	35	736	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	3	0	0	0	98	0	1	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	189	0	0	318	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	341	52	46	395	81	72	883	72	36	1087	35
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	90	14	12	104	21	19	232	19	9	286	9
Total Analysis Volume [veh/h]	55	359	55	48	416	85	76	929	76	38	1144	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	18	29	10	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	17	17	5	17	17	6	35	42	5	34	34
g / C, Green / Cycle	0.08	0.24	0.24	0.08	0.24	0.24	0.09	0.50	0.61	0.07	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.04	0.13	0.04	0.03	0.17	0.17	0.05	0.33	0.03	0.03	0.40	0.40
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1401	1416	2831	2237	1416	1487	1471
c, Capacity [veh/h]	112	686	306	107	355	335	126	1411	1285	98	712	705
d1, Uniform Delay [s]	30.89	23.00	21.00	30.97	24.50	24.56	30.71	13.11	6.56	31.14	15.81	15.81
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.33	0.62	0.28	2.94	2.78	3.07	4.61	2.42	0.02	2.47	11.01	11.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.49	0.52	0.18	0.45	0.72	0.73	0.60	0.66	0.06	0.39	0.83	0.83
d, Delay for Lane Group [s/veh]	34.22	23.62	21.28	33.91	27.28	27.62	35.32	15.53	6.58	33.61	26.81	26.96
Lane Group LOS	C	C	C	C	C	C	D	B	A	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.94	2.40	0.68	0.81	3.83	3.68	1.32	4.90	0.20	0.64	8.86	8.80
50th-Percentile Queue Length [ft]	23.43	60.02	16.97	20.37	95.71	91.96	32.94	122.52	4.93	16.10	221.50	219.97
95th-Percentile Queue Length [veh]	1.69	4.32	1.22	1.47	6.89	6.62	2.37	8.53	0.36	1.16	13.74	13.66
95th-Percentile Queue Length [ft]	42.18	108.04	30.54	36.67	172.28	165.53	59.29	213.28	8.88	28.97	343.54	341.58

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.22	23.62	21.28	33.91	27.41	27.62	35.32	15.53	6.58	33.61	26.89	26.96
Movement LOS	C	C	C	C	C	C	D	B	A	C	C	C
d_A, Approach Delay [s/veh]	24.59			28.02			16.29			27.10		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	23.37											
Intersection LOS	C											
Intersection V/C	0.666											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	27.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.749

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	62	635	227	26	707	302	114	316	32	162	603	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	3	0	0	0	113	0	1	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	189	0	0	318	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	635	232	29	707	302	114	632	32	163	956	53
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	167	61	8	186	79	30	166	8	43	252	14
Total Analysis Volume [veh/h]	65	668	244	31	744	318	120	665	34	172	1006	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	10	29	0	10	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	22	22	4	21	21	8	28	28	7	27	27
g / C, Green / Cycle	0.08	0.32	0.32	0.06	0.30	0.30	0.12	0.40	0.40	0.10	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.19	0.02	0.26	0.25	0.08	0.24	0.24	0.06	0.36	0.04
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1462	2750	2831	1264
c, Capacity [veh/h]	117	905	404	91	852	381	167	592	582	285	1087	485
d1, Uniform Delay [s]	30.85	21.19	20.07	31.34	23.19	22.85	29.77	16.61	16.62	30.00	20.59	13.89
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.15	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.03	1.20	1.45	2.20	2.98	6.52	5.75	4.37	4.44	2.06	14.34	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.55	0.74	0.60	0.34	0.87	0.84	0.72	0.60	0.60	0.60	0.93	0.12
d, Delay for Lane Group [s/veh]	34.88	22.39	21.52	33.54	26.17	29.37	35.53	20.98	21.06	32.06	34.93	14.37
Lane Group LOS	C	C	C	C	C	C	D	C	C	C	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.12	4.46	3.15	0.53	5.52	5.04	2.08	4.59	4.52	1.37	8.90	0.57
50th-Percentile Queue Length [ft]	27.97	111.62	78.69	13.16	137.94	125.97	52.00	114.68	113.10	34.36	222.61	14.28
95th-Percentile Queue Length [veh]	2.01	7.93	5.67	0.95	9.37	8.72	3.74	8.10	8.01	2.47	13.80	1.03
95th-Percentile Queue Length [ft]	50.35	198.25	141.64	23.70	234.25	218.00	93.61	202.50	200.31	61.85	344.96	25.70

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.88	22.39	21.52	33.54	26.17	29.37	35.53	21.02	21.06	32.06	34.93	14.37
Movement LOS	C	C	C	C	C	C	D	C	C	C	C	B
d_A, Approach Delay [s/veh]	23.00			27.31			23.15			33.60		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	27.34											
Intersection LOS	C											
Intersection V/C	0.749											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	180.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	24	131	60	57	73	77	73	294	22	47	605	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	4	0	0	0	132	0	1	23	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	189	0	0	318	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	131	65	61	73	77	73	629	22	48	961	82
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	34	17	16	19	20	19	166	6	13	253	22
Total Analysis Volume [veh/h]	25	138	68	64	77	81	77	662	23	51	1012	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	14	29	0	10	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	11	11	6	13	13	6	40	40	5	39	39
g / C, Green / Cycle	0.06	0.16	0.16	0.08	0.18	0.18	0.09	0.57	0.57	0.08	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.05	0.05	0.05	0.06	0.05	0.16	0.16	0.04	0.36	0.07
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1462	1416	2831	1264
c, Capacity [veh/h]	85	236	200	117	270	229	125	1607	830	109	1575	703
d1, Uniform Delay [s]	31.50	27.33	26.20	30.84	24.74	25.06	30.77	7.78	7.79	30.93	10.72	7.39
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.91	2.31	1.00	3.91	0.58	0.92	4.87	0.44	0.85	3.10	2.03	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

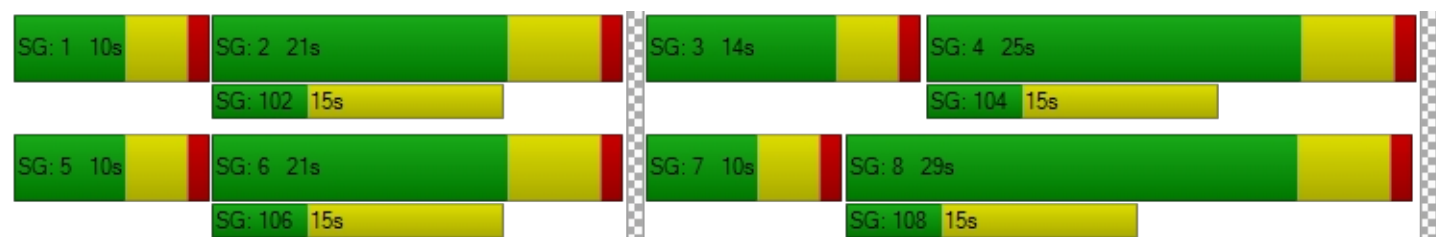
X, volume / capacity	0.30	0.59	0.34	0.55	0.29	0.35	0.62	0.28	0.28	0.47	0.64	0.12
d, Delay for Lane Group [s/veh]	33.41	29.64	27.20	34.75	25.31	25.99	35.64	8.22	8.64	34.03	12.75	7.75
Lane Group LOS	C	C	C	C	C	C	D	A	A	C	B	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.43	2.13	0.99	1.10	1.07	1.15	1.34	1.45	1.60	0.87	4.59	0.56
50th-Percentile Queue Length [ft]	10.64	53.35	24.81	27.49	26.63	28.70	33.55	36.31	40.03	21.68	114.67	13.88
95th-Percentile Queue Length [veh]	0.77	3.84	1.79	1.98	1.92	2.07	2.42	2.61	2.88	1.56	8.10	1.00
95th-Percentile Queue Length [ft]	19.15	96.04	44.65	49.48	47.93	51.67	60.38	65.36	72.06	39.02	202.48	24.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.41	29.64	27.20	34.75	25.31	25.99	35.64	8.35	8.64	34.03	12.75	7.75
Movement LOS	C	C	C	C	C	C	D	A	A	C	B	A
d_A, Approach Delay [s/veh]	29.33			28.28			11.12			13.32		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.58											
Intersection LOS	B											
Intersection V/C	0.550											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	17.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	145	763	32	24	702	169	89	165	94	46	335	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	8	0	15	36	0	0	61	87	0	10	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	15	21	0	0	16	0	0	0	14	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	37	202	1	1	732	0	0	155	77	3	311	3
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	994	33	40	1486	169	89	381	272	49	656	50
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	262	9	11	391	44	23	100	72	13	173	13
Total Analysis Volume [veh/h]	223	1046	35	42	1564	178	94	401	286	52	691	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	24	0	13	27	0	0	23	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	28	28	5	26	26	21	21	21	21	21	21
g / C, Green / Cycle	0.12	0.47	0.47	0.08	0.43	0.43	0.35	0.35	0.35	0.35	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.02	0.03	0.34	0.12	0.15	0.24	0.20	0.06	0.22	0.22
s, saturation flow rate [veh/h]	3101	4567	1425	1597	4567	1425	642	1676	1425	882	1676	1635
c, Capacity [veh/h]	374	2138	667	131	1961	612	213	587	499	234	587	572
d1, Uniform Delay [s]	25.00	11.01	8.70	25.97	14.85	11.16	25.69	16.66	15.86	24.19	16.35	16.35
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.53	0.80	0.15	1.40	3.48	1.20	1.43	1.42	1.04	0.48	1.18	1.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

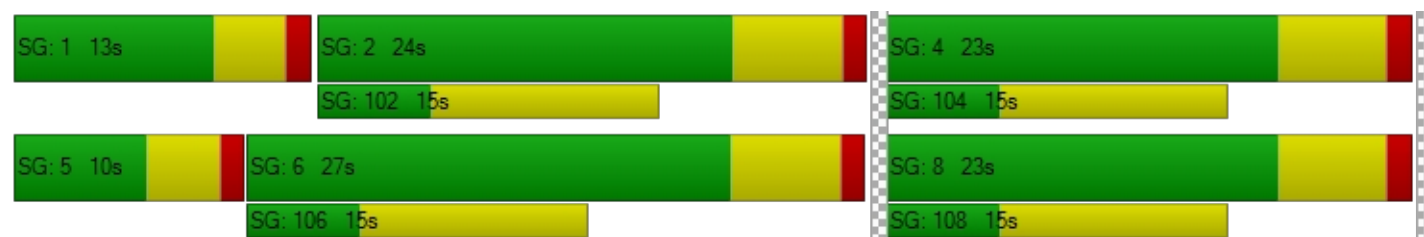
X, volume / capacity	0.60	0.49	0.05	0.32	0.80	0.29	0.44	0.68	0.57	0.22	0.64	0.64
d, Delay for Lane Group [s/veh]	26.53	11.81	8.85	27.37	18.33	12.36	27.12	18.08	16.90	24.66	17.52	17.56
Lane Group LOS	C	B	A	C	B	B	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	1.44	2.65	0.23	0.57	5.52	1.46	1.29	4.18	2.83	0.65	3.83	3.75
50th-Percentile Queue Length [ft]	35.99	66.16	5.63	14.20	138.05	36.47	32.16	104.54	70.66	16.22	95.79	93.64
95th-Percentile Queue Length [veh]	2.59	4.76	0.41	1.02	9.38	2.63	2.32	7.53	5.09	1.17	6.90	6.74
95th-Percentile Queue Length [ft]	64.79	119.09	10.13	25.57	234.39	65.65	57.88	188.17	127.19	29.19	172.43	168.55

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.53	11.81	8.85	27.37	18.33	12.36	27.12	18.08	16.90	24.66	17.54	17.56
Movement LOS	C	B	A	C	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	14.25			17.94			18.73			18.01		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	17.05											
Intersection LOS	B											
Intersection V/C	0.654											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	All-way stop	Delay (sec / veh):	325.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.308

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	21	166	22	35	115	22	32	163	9	47	389	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	13	38	0	0	214	0	0	0	76	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	18	6	1	45	0	0	174	0	11	354	2
Total Hourly Volume [veh/h]	34	222	28	36	374	22	32	337	85	58	743	73
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	58	7	9	98	6	8	89	22	15	196	19
Total Analysis Volume [veh/h]	36	234	29	38	394	23	34	355	89	61	782	77
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	377	455	478	920
Degree of Utilization, x	0.79	1.14	1.19	2.31

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	6.80	17.14	19.02	70.10
95th-Percentile Queue Length [ft]	170.10	428.51	475.54	1752.60
Approach Delay [s/veh]	40.86	120.25	136.67	616.36
Approach LOS	E	F	F	F
Intersection Delay [s/veh]	324.96			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	123.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.095

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	500.00	100.00	280.00	320.00	100.00	75.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	40.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	173	876	239	30	356	82	39	130	47	151	275	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	41	35	0	200	0	0	0	0	166	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	9	7	0	9	0	0	0	0	7	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	223	979	300	5	1130	51	113	180	218	378	282	16
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	396	1905	581	35	1695	133	152	310	265	702	557	66
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	104	501	153	9	446	35	40	82	70	185	147	17
Total Analysis Volume [veh/h]	417	2005	612	37	1784	140	160	326	279	739	586	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	63	26	10	57	0	10	21	16	26	37	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	14	63	6	55	55	8	19	24	35	35
g / C, Green / Cycle	0.12	0.52	0.05	0.46	0.46	0.07	0.16	0.20	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.13	0.63	0.02	0.56	0.10	0.05	0.10	0.24	0.35	0.05
s, saturation flow rate [veh/h]	3101	3192	1597	3192	1425	3101	3192	3101	1676	1425
c, Capacity [veh/h]	362	1669	83	1463	653	207	505	620	489	416
d1, Uniform Delay [s]	53.00	28.63	55.18	32.50	19.52	55.11	47.34	48.00	42.50	31.64
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	76.07	96.66	3.68	105.16	0.75	6.08	1.39	89.99	107.73	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.15	1.20	0.44	1.22	0.21	0.77	0.65	1.19	1.20	0.17
d, Delay for Lane Group [s/veh]	129.07	125.29	58.86	137.66	20.27	61.19	48.73	137.99	150.23	31.82
Lane Group LOS	F	F	E	F	C	E	D	F	F	C
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	9.17	44.35	1.15	40.94	2.39	2.50	4.54	16.70	28.47	1.48
50th-Percentile Queue Length [ft]	229.19	1108.86	28.69	1023.40	59.65	62.45	113.58	417.62	711.74	36.88
95th-Percentile Queue Length [veh]	14.94	63.30	2.07	59.02	4.29	4.50	8.04	25.52	41.42	2.66
95th-Percentile Queue Length [ft]	373.39	1582.52	51.63	1475.58	107.36	112.42	200.98	638.02	1035.41	66.38

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	129.07	125.29	0.00	58.86	137.66	20.27	61.19	48.73	0.00	137.99	150.23	31.82
Movement LOS	F	F		E	F	C	E	D		F	F	C
d_A, Approach Delay [s/veh]	125.94			127.79			52.83			137.88		
Approach LOS	F			F			D			F		
d_I, Intersection Delay [s/veh]	123.50											
Intersection LOS	F											
Intersection V/C	1.095											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	100.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.384

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TTL			TTL			TTL			TTL		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	240.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	106	428	253	95	173	24	24	261	60	133	398	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	35	0	0	166	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	13	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	43	431	164	103	368	72	170	1254	2	384	821	58
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	859	417	198	541	96	194	1564	62	517	1398	232
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	226	110	52	142	25	51	412	16	136	368	61
Total Analysis Volume [veh/h]	157	904	439	208	569	101	204	1646	65	544	1472	244
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups			2,7									1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	21	13	13	21	0	46	33	0	13	35	13
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	11	19	32	11	19	19	44	31	31	11	0	11
g / C, Green / Cycle	0.14	0.24	0.40	0.14	0.24	0.24	0.55	0.39	0.39	0.14	0.00	0.14
(v / s)_i Volume / Saturation Flow Rate	0.49	0.28	0.31	0.33	0.21	0.21	0.63	0.52	0.05	0.18	0.46	0.17
s, saturation flow rate [veh/h]	322	3192	1425	626	1676	1590	322	3192	1425	3101	3192	1425
c, Capacity [veh/h]	128	758	531	163	398	378	252	1237	552	426	0	196
d1, Uniform Delay [s]	38.61	30.50	22.76	37.90	29.26	29.26	23.96	24.50	15.72	34.50	0.00	34.50
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.50	0.22	0.11	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	153.69	99.42	13.78	133.32	21.25	22.22	23.62	151.38	0.09	128.27	0.00	119.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

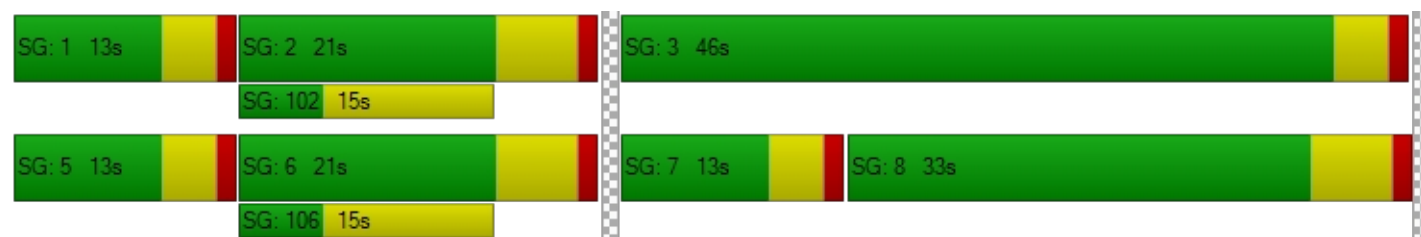
X, volume / capacity	1.23	1.19	0.83	1.27	0.86	0.86	0.81	1.33	0.12	1.28	0.00	1.25
d, Delay for Lane Group [s/veh]	192.31	129.92	36.54	171.22	50.51	51.48	47.58	175.88	15.82	162.77	0.00	154.18
Lane Group LOS	F	F	D	F	D	D	D	F	B	F	A	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	7.90	17.23	8.76	4.59	8.24	7.91	5.51	36.38	0.71	11.51	0.00	10.11
50th-Percentile Queue Length [ft]	197.57	430.80	219.02	114.74	205.90	197.85	137.70	909.49	17.85	287.69	0.00	252.74
95th-Percentile Queue Length [veh]	13.53	26.35	13.61	8.26	12.94	12.53	9.36	54.97	1.29	18.78	0.00	16.70
95th-Percentile Queue Length [ft]	338.31	658.87	340.37	206.53	323.56	313.18	233.93	1374.27	32.13	469.61	0.00	417.50

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	192.31	129.92	36.54	171.22	50.89	51.48	47.58	175.88	15.82	162.77	0.00	154.18
Movement LOS	F	F	D	F	D	D	D	F	B	F	A	F
d_A, Approach Delay [s/veh]	109.12			79.46			156.78			55.83		
Approach LOS	F			E			F			E		
d_I, Intersection Delay [s/veh]	100.70											
Intersection LOS	F											
Intersection V/C	1.384											

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	68.3
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.057

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵↵		↑↑↑		↑↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	263	470	0	425	338	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	156	0	35	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	11	0	14	2	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	1241	0	1102	428	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	263	1878	0	1576	778	0
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	494	0	415	205	0
Total Analysis Volume [veh/h]	277	1977	0	1659	819	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.4	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	51	0	0	29	29	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	49	49	49	27	27
g / C, Green / Cycle	0.61	0.61	0.61	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.17	0.69	0.69	0.36	0.26
s, saturation flow rate [veh/h]	1597	1425	1425	4567	3192
c, Capacity [veh/h]	978	873	873	1541	1077
d1, Uniform Delay [s]	7.27	15.50	15.50	26.50	23.62
k, delay calibration	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	73.87	73.87	46.53	5.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.28	1.13	1.13	1.08	0.76
d, Delay for Lane Group [s/veh]	7.42	89.37	89.37	73.03	28.68
Lane Group LOS	A	F	F	F	C
Critical Lane Group	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	1.96	30.81	30.81	15.82	7.28
50th-Percentile Queue Length [ft]	49.05	770.25	770.25	395.52	181.95
95th-Percentile Queue Length [veh]	3.53	44.04	44.04	23.40	11.70
95th-Percentile Queue Length [ft]	88.29	1100.91	1100.91	585.05	292.56

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	7.42	89.37	0.00	73.03	28.68	0.00
Movement LOS	A	F		F	C	
d_A, Approach Delay [s/veh]	79.30		73.03		28.68	
Approach LOS	E		E		C	
d_I, Intersection Delay [s/veh]	68.34					
Intersection LOS	E					
Intersection V/C	1.057					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.367

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	180	149	300	385	322	244
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	34	0	10
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	2	12	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	326	0	135	914	0	102
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	506	149	438	1345	322	358
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	133	39	115	354	85	94
Total Analysis Volume [veh/h]	533	157	461	1416	339	377
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	44	0	76	44	0	76
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	42	42	42	74	118	74	74
g / C, Green / Cycle	0.35	0.35	0.35	0.62	0.98	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.17	0.17	0.11	0.10	0.99	0.21	0.08
s, saturation flow rate [veh/h]	1597	1597	1425	4567	1425	1621	4567
c, Capacity [veh/h]	559	559	499	2816	1356	977	2816
d1, Uniform Delay [s]	30.43	30.43	28.49	9.81	2.90	14.30	9.61
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	0.63	0.36	0.13	36.81	0.98	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	0.48	0.31	0.16	1.04	0.35	0.13
d, Delay for Lane Group [s/veh]	31.06	31.06	28.85	9.93	39.71	15.28	9.71
Lane Group LOS	C	C	C	A	F	B	A
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	6.11	6.11	3.36	1.72	13.87	2.62	1.38
50th-Percentile Queue Length [ft]	152.67	152.67	84.09	43.09	346.67	65.40	34.52
95th-Percentile Queue Length [veh]	10.16	10.16	6.05	3.10	20.76	4.71	2.49
95th-Percentile Queue Length [ft]	253.98	253.98	151.36	77.56	519.03	117.73	62.14

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.06	28.85	9.93	39.71	15.28	9.71
Movement LOS	C	C	A	F	B	A
d_A, Approach Delay [s/veh]	30.56		32.40		12.35	
Approach LOS	C		C		B	
d_I, Intersection Delay [s/veh]	27.64					
Intersection LOS	C					
Intersection V/C	0.367					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.783

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	75.00	140.00	100.00	70.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	156	877	3	8	803	35	56	12	125	5	48	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	7	0	93	30	0	0	3	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	36	0	0	30	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	15	191	0	24	788	0	0	4	53	0	8	51
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	1111	3	125	1651	35	56	19	178	5	56	77
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	292	1	33	434	9	15	5	47	1	15	20
Total Analysis Volume [veh/h]	180	1169	3	132	1738	37	59	20	187	5	59	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	13	38	0	11	36	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	11	42	42	8	40	40	14	14	14	14	14
g / C, Green / Cycle	0.15	0.60	0.60	0.12	0.57	0.57	0.20	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.11	0.37	0.00	0.08	0.54	0.03	0.05	0.01	0.13	0.00	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1119	1676	1482	1248	1521
c, Capacity [veh/h]	241	1909	852	190	1808	807	240	331	292	339	300
d1, Uniform Delay [s]	28.45	8.92	5.67	29.61	14.45	6.76	28.43	22.83	25.82	23.11	24.85
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.61	1.48	0.01	4.50	13.80	0.11	0.53	0.08	2.33	0.02	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	0.61	0.00	0.69	0.96	0.05	0.25	0.06	0.64	0.01	0.47
d, Delay for Lane Group [s/veh]	33.06	10.40	5.67	34.10	28.25	6.86	28.96	22.91	28.15	23.13	25.98
Lane Group LOS	C	B	A	C	C	A	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.07	4.92	0.02	2.22	13.15	0.22	0.89	0.26	2.82	0.06	1.99
50th-Percentile Queue Length [ft]	76.86	123.00	0.41	55.59	328.75	5.42	22.26	6.39	70.45	1.60	49.71
95th-Percentile Queue Length [veh]	5.53	8.56	0.03	4.00	19.10	0.39	1.60	0.46	5.07	0.12	3.58
95th-Percentile Queue Length [ft]	138.34	213.94	0.74	100.06	477.42	9.76	40.07	11.50	126.82	2.88	89.47

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.06	10.40	5.67	34.10	28.25	6.86	28.96	22.91	28.15	23.13	25.98	25.98
Movement LOS	C	B	A	C	C	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	13.41			28.24			27.94			25.88		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	22.66											
Intersection LOS	C											
Intersection V/C	0.783											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	735.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.435

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	30	205	2	3	149	23	12	3	10	1	8	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	10	0	240	50	0	0	91	4	0	16	41
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	31	0	0	88	0	0	28	0	32	59	0
Total Hourly Volume [veh/h]	42	246	2	243	287	23	12	122	14	33	83	43
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	65	1	64	76	6	3	32	4	9	22	11
Total Analysis Volume [veh/h]	44	259	2	256	302	24	13	128	15	35	87	45
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.20	0.00	0.00	0.23	0.92	0.02	1.44	0.63	0.06
d_M, Delay for Movement [s/veh]	8.03	0.00	0.00	8.44	0.00	0.00	229.30	192.49	171.62	735.19	613.76	592.16
Movement LOS	A	A	A	A	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh]	0.98	0.98	0.98	2.36	2.36	2.36	9.16	9.16	9.16	15.19	15.19	15.19
95th-Percentile Queue Length [ft]	24.43	24.43	24.43	58.97	58.97	58.97	228.91	228.91	228.91	379.63	379.63	379.63
d_A, Approach Delay [s/veh]	1.16			3.71			193.55			633.39		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	114.45											
Intersection LOS	F											

**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	15.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.070

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	↩↩		↩		↩	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	14	1	3	10	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	37	260	71	62	46
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	9	0	0	5	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	60	0	0	70
Total Hourly Volume [veh/h]	26	47	323	81	67	119
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	12	85	21	18	31
Total Analysis Volume [veh/h]	27	49	340	85	71	125
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.07	0.08	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	15.01	11.12	0.00	0.00	8.61	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.22	0.25	0.00	0.00	0.21	0.00
95th-Percentile Queue Length [ft]	5.60	6.23	0.00	0.00	5.33	0.00
d_A, Approach Delay [s/veh]	12.50		0.00		3.12	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.24					
Intersection LOS	C					



**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	78.1
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.821

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	0	0	0	1	0	0
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	14	834	97	126	743	45	4	5	5	185	53	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	77	30	0	0	0	1	0	14	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	6	30	0	0	0	0	0	6	0	36
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	47	421	632	226	0	0	0	0	101	0	157
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	881	601	818	969	45	4	6	5	306	53	404
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	232	158	215	255	12	1	2	1	81	14	106
Total Analysis Volume [veh/h]	15	927	633	861	1020	47	4	6	5	322	56	425
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.2	4.8	0.0	3.6	4.8	0.0	0.0	3.0	0.0	0.0	5.2	3.6
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	9	27	0	24	42	0	0	9	0	0	64	24
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	L	C	R
C, Cycle Length [s]	61	61	61	61	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	0.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00
g_i, Effective Green Time [s]	3	29	29	22	47	47	3	0	0	22
g / C, Green / Cycle	0.05	0.47	0.47	0.36	0.78	0.78	0.05	0.00	0.00	0.36
(v / s)_i Volume / Saturation Flow Rate	0.01	0.20	0.44	0.37	0.22	0.22	0.01	0.86	0.03	0.30
s, saturation flow rate [veh/h]	1208	4567	1425	2346	3192	1639	1545	373	1676	1425
c, Capacity [veh/h]	168	2157	673	924	2482	1275	155	118	0	514
d1, Uniform Delay [s]	28.38	10.65	15.27	20.68	1.93	1.94	27.65	30.50	0.00	17.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	0.63	22.79	4.93	0.29	0.56	0.27	801.00	0.00	5.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

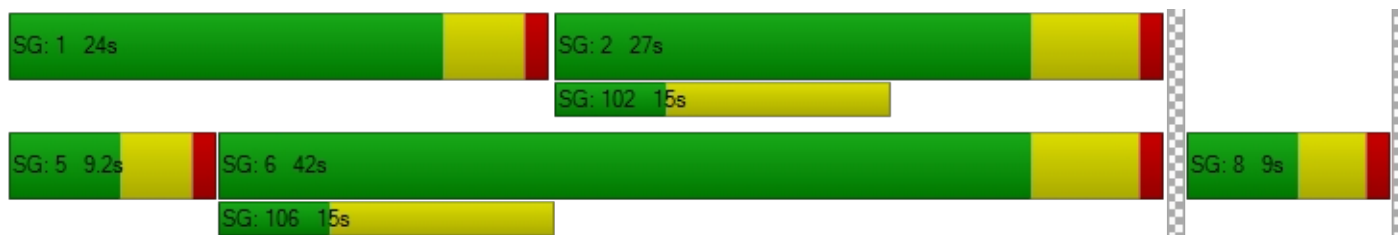
X, volume / capacity	0.09	0.43	0.94	0.93	0.28	0.28	0.10	2.73	0.00	0.83
d, Delay for Lane Group [s/veh]	28.61	11.28	38.06	25.62	2.22	2.50	27.92	831.50	0.00	22.85
Lane Group LOS	C	B	D	C	A	A	C	F	A	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.21	2.29	10.63	5.93	0.29	0.39	0.20	14.13	0.00	5.54
50th-Percentile Queue Length [ft]	5.17	57.35	265.79	148.17	7.14	9.77	5.11	353.28	0.00	138.50
95th-Percentile Queue Length [veh]	0.37	4.13	15.98	9.92	0.51	0.70	0.37	20.30	0.00	9.40
95th-Percentile Queue Length [ft]	9.30	103.22	399.48	247.98	12.86	17.59	9.19	507.40	0.00	235.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.61	11.28	38.06	25.62	2.31	2.50	27.92	27.92	27.92	831.50	0.00	22.85
Movement LOS	C	B	D	C	A	A	C	C	C	F	A	C
d_A, Approach Delay [s/veh]	22.21			12.72			27.92			345.52		
Approach LOS	C			B			C			F		
d_I, Intersection Delay [s/veh]	78.08											
Intersection LOS	E											
Intersection V/C	0.821											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type:	All-way stop	Delay (sec / veh):	179.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.497

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			TTL			TTL		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Base Volume Input [veh/h]	0	0	0	71	0	84	52	119	0	0	379	177
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	54	0	0	0	108	0	0	21	11
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	36	0	0	42	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	6	0	90	13	26	11	1069	0	0	291	27
Total Hourly Volume [veh/h]	0	6	0	215	13	110	63	1332	0	0	733	215
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	57	3	29	17	351	0	0	193	57
Total Analysis Volume [veh/h]	0	6	0	226	14	116	66	1402	0	0	772	226
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	351	402	440	701	701	499	499
Degree of Utilization, x	0.02	0.89	0.15	1.50	1.50	1.21	1.16

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.05	9.03	0.52	36.32	36.32	20.05	18.74
95th-Percentile Queue Length [ft]	1.30	225.76	13.10	907.98	907.98	501.14	468.40
Approach Delay [s/veh]	13.45	51.25	244.16		132.36		
Approach LOS	B	F	F		F		
Intersection Delay [s/veh]	179.93						
Intersection LOS	F						

**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Two-way stop	Delay (sec / veh):	1,285.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.984

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			← →			+			← →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	22	1	5	4	0	0	0	179	22	14	490	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	14	0	8	44	119	0	0	23	44
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	3	0	8	7	29	0	0	34	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	35	0	88	0	0	0	0	241	85	237	321	0
Total Hourly Volume [veh/h]	57	1	93	21	0	16	51	568	107	251	868	53
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	24	6	0	4	13	149	28	66	228	14
Total Analysis Volume [veh/h]	60	1	98	22	0	17	54	598	113	264	914	56
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	2.98	0.04	0.21	1.46	0.00	0.05	0.08	0.01	0.00	0.30	0.01	0.00
d_M, Delay for Movement [s/veh]	1285.82	1250.23	1114.52	760.01	155.19	16.93	10.48	0.00	0.00	10.76	0.00	0.00
Movement LOS	F	F	F	F	F	C	B	A	A	B	A	A
95th-Percentile Queue Length [veh]	17.20	17.20	17.20	3.34	0.17	0.17	20.68	20.68	20.68	1.25	0.00	0.00
95th-Percentile Queue Length [ft]	429.90	429.90	429.90	83.53	4.21	4.21	517.10	517.10	517.10	31.21	0.00	0.00
d_A, Approach Delay [s/veh]	1180.02			436.10			0.74			2.30		
Approach LOS	F			F			F			A		
d_I, Intersection Delay [s/veh]	94.69											
Intersection LOS	F											



**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.853

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	1	0	0
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	70.00	100.00	70.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	335	1158	55	44	381	138	107	11	65	34	34	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	129	105	0	0	18	61	15	0	24	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	16	0	0	0	0	3	4	0	19	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	234	881	0	85	1360	450	157	48	102	0	98	44
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	714	2144	55	129	1759	652	283	59	210	34	132	109
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	188	564	14	34	463	172	74	16	55	9	35	29
Total Analysis Volume [veh/h]	752	2257	58	136	1852	686	298	62	221	36	139	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	64	0	10	45	15	15	16	0	20	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	27	67	67	8	48	63	13	21	6	14	14
g / C, Green / Cycle	0.25	0.61	0.61	0.07	0.44	0.57	0.12	0.19	0.05	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.24	0.49	0.04	0.04	0.41	0.48	0.10	0.02	0.02	0.08	0.08
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1597	1676	1437
c, Capacity [veh/h]	761	2781	868	226	1992	787	366	618	83	214	183
d1, Uniform Delay [s]	41.34	16.63	8.77	49.46	29.41	21.23	47.32	36.48	50.56	45.46	45.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.63	2.70	0.15	2.58	9.24	12.68	4.39	0.07	3.52	2.90	4.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.99	0.81	0.07	0.60	0.93	0.87	0.81	0.10	0.43	0.62	0.67
d, Delay for Lane Group [s/veh]	53.97	19.33	8.92	52.04	38.65	33.91	51.71	36.55	54.08	48.37	49.87
Lane Group LOS	D	B	A	D	D	C	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	11.12	13.49	0.56	1.86	16.12	16.43	4.11	0.68	1.03	3.52	3.32
50th-Percentile Queue Length [ft]	278.06	337.36	13.90	46.46	403.03	410.85	102.87	16.97	25.65	87.98	82.89
95th-Percentile Queue Length [veh]	16.59	19.52	1.00	3.35	22.71	23.08	7.41	1.22	1.85	6.33	5.97
95th-Percentile Queue Length [ft]	414.80	487.97	25.02	83.64	567.65	577.06	185.17	30.55	46.18	158.37	149.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	53.97	19.33	8.92	52.04	38.65	33.91	51.71	36.55	0.00	54.08	48.44	49.87
Movement LOS	D	B	A	D	D	C	D	D		D	D	D
d_A, Approach Delay [s/veh]	27.63			38.12			49.10			49.71		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	34.23											
Intersection LOS	C											
Intersection V/C	0.853											

**Sequence**




Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	58.4
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.041

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	2	0	1	1
Pocket Length [ft]	100.00	350.00	250.00	100.00	200.00	200.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	651	118	154	311	260	901
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	65	0	30	13	0	169
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	6	0	11	8	0	11
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	715	145	346	881	310	433
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1437	263	541	1213	570	1514
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	378	69	142	319	150	398
Total Analysis Volume [veh/h]	1513	277	569	1277	600	1594
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	2	2	1	6	7	4
Auxiliary Signal Groups		2,7				1,4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	5.2	5.2	3.6	5.2	3.2	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	33	33	57	90	20	71
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	2.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	2.0
Minimum Recall	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	31	51	55	88	18	55
g / C, Green / Cycle	0.28	0.46	0.50	0.80	0.16	0.50
(v / s)_i Volume / Saturation Flow Rate	0.30	0.17	0.17	0.36	0.17	0.57
s, saturation flow rate [veh/h]	5074	1583	3445	3547	3445	2803
c, Capacity [veh/h]	1430	702	1723	2837	564	1401
d1, Uniform Delay [s]	39.50	20.63	16.47	3.44	46.00	27.50
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	40.81	1.66	0.11	0.52	37.69	65.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

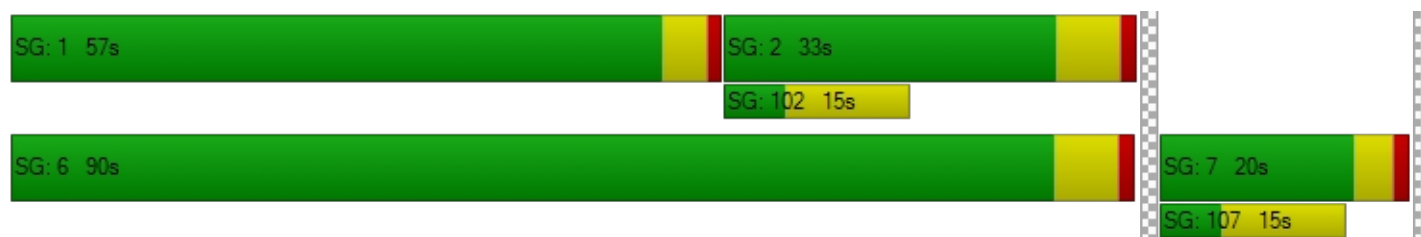
X, volume / capacity	1.06	0.39	0.33	0.45	1.06	1.14
d, Delay for Lane Group [s/veh]	80.31	22.29	16.58	3.96	83.69	92.76
Lane Group LOS	F	C	B	A	F	F
Critical Lane Group	Yes	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh]	17.45	4.76	3.94	2.52	10.44	29.43
50th-Percentile Queue Length [ft]	436.27	118.94	98.51	62.93	260.99	735.81
95th-Percentile Queue Length [veh]	25.15	8.33	7.09	4.53	16.21	42.13
95th-Percentile Queue Length [ft]	628.82	208.37	177.32	113.28	405.16	1053.36

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	80.31	22.29	16.58	3.96	83.69	92.76
Movement LOS	F	C	B	A	F	F
d_A, Approach Delay [s/veh]	71.33		7.85		90.28	
Approach LOS	E		A		F	
d_I, Intersection Delay [s/veh]	58.36					
Intersection LOS	E					
Intersection V/C	1.041					

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	72.1
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.061

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	200.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	165	393	406	300	299	111	163	741	40	258	458	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	33	0	0	0	0	22	4	21	5	0	114	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	11	0	0	11	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	171	242	0	155	192	196	124	768	74	0	2162	61
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	369	635	406	455	491	329	291	1541	119	258	2745	132
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	97	167	107	120	129	87	77	406	31	68	722	35
Total Analysis Volume [veh/h]	388	668	427	479	517	346	306	1622	125	272	2889	139
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	18	21	25	19	22	13	13	55	18	25	67	19
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	16	19	44	17	20	33	11	53	71	23	65	84
g / C, Green / Cycle	0.13	0.16	0.37	0.14	0.17	0.28	0.09	0.44	0.59	0.19	0.54	0.70
(v / s)_i Volume / Saturation Flow Rate	0.13	0.15	0.30	0.15	0.11	0.24	0.10	0.36	0.09	0.09	0.63	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	413	723	496	439	761	366	284	2017	817	594	2474	971
d1, Uniform Delay [s]	51.51	49.79	36.38	51.50	46.99	43.78	54.50	29.01	11.97	42.97	27.50	6.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.43	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.43	19.31	17.47	49.49	4.85	32.00	48.22	0.78	0.09	0.55	76.64	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.94	0.92	0.86	1.09	0.68	0.95	1.08	0.80	0.15	0.46	1.17	0.14
d, Delay for Lane Group [s/veh]	61.94	69.10	53.85	100.99	51.83	75.78	102.72	29.79	12.06	43.53	104.14	6.80
Lane Group LOS	E	E	D	F	D	E	F	C	B	D	F	A
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	6.26	7.74	13.62	9.49	5.09	13.05	6.12	12.95	1.51	3.56	39.03	1.14
50th-Percentile Queue Length [ft]	156.62	193.50	340.44	237.15	127.28	326.19	152.96	323.82	37.77	89.12	975.85	28.46
95th-Percentile Queue Length [veh]	10.37	12.30	19.67	15.09	8.79	18.97	10.44	18.86	2.72	6.42	55.43	2.05
95th-Percentile Queue Length [ft]	259.24	307.56	491.73	377.35	219.79	474.29	261.05	471.38	67.99	160.41	1385.64	51.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	61.94	69.10	53.85	100.99	51.83	75.78	102.72	29.79	12.06	43.53	104.14	6.80
Movement LOS	E	E	D	F	D	E	F	C	B	D	F	A
d_A, Approach Delay [s/veh]	62.84			75.55			39.58			95.05		
Approach LOS	E			E			D			F		
d_I, Intersection Delay [s/veh]	72.08											
Intersection LOS	E											
Intersection V/C	1.061											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	345.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.167

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	152	0	393	0	994	478	557	578	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	6	0	3	18	0	108	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	2	0	1	10	0	9	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	2393	0	712	359	0	1438	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	152	0	2794	0	1710	865	557	2133	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	40	0	735	0	450	228	147	561	0
Total Analysis Volume [veh/h]	0	0	0	160	0	2941	0	1800	911	586	2245	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	71	0	0	36	0	13	49	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		69	69	69	34	34	11	47
g / C, Green / Cycle		0.58	0.58	0.58	0.28	0.28	0.09	0.39
(v / s)_i Volume / Saturation Flow Rate		0.10	1.34	0.73	0.39	0.64	0.19	0.49
s, saturation flow rate [veh/h]		1597	1425	1425	4567	1425	3101	4567
c, Capacity [veh/h]		918	819	819	1294	404	284	1789
d1, Uniform Delay [s]		12.04	25.50	25.50	43.00	43.00	54.50	36.50
k, delay calibration		0.11	0.50	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.09	601.33	127.47	180.83	573.25	480.42	119.57
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity		0.17	2.33	1.26	1.39	2.26	2.06	1.26
d, Delay for Lane Group [s/veh]		12.13	626.83	152.97	223.83	616.25	534.92	156.07
Lane Group LOS		B	F	F	F	F	F	F
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		1.95	157.74	49.89	34.03	75.87	23.18	36.41
50th-Percentile Queue Length [ft]		48.71	3943.58	1247.27	850.81	1896.75	579.50	910.13
95th-Percentile Queue Length [veh]		3.51	260.89	72.91	51.83	121.22	37.34	53.52
95th-Percentile Queue Length [ft]		87.68	6522.28	1822.81	1295.73	3030.60	933.56	1337.90

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	12.13	626.83	460.29	0.00	223.83	616.25	534.92	156.07	0.00
Movement LOS				B	F	F		F	F	F	F	
d_A, Approach Delay [s/veh]	0.00			437.16			355.70			234.49		
Approach LOS	A			F			F			F		
d_I, Intersection Delay [s/veh]	345.23											
Intersection LOS	F											
Intersection V/C	2.167											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	91.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.093

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	208	0	295	0	0	0	701	441	0	0	915	312
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	98	0	0	0	0	0	2	1	0	0	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	9	0	0	0	0	0	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	944	0	0	0	0	0	330	250	0	0	494	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1259	0	295	0	0	0	1034	692	0	0	1419	312
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	331	0	78	0	0	0	272	182	0	0	373	82
Total Analysis Volume [veh/h]	1325	0	311	0	0	0	1088	728	0	0	1494	328
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	0	0	29	56	0	0	27	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	32	32	32		27	54	25	25
g / C, Green / Cycle	0.36	0.36	0.36		0.30	0.60	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.41	0.41	0.22		0.35	0.16	0.33	0.23
s, saturation flow rate [veh/h]	1597	1597	1425		3101	4567	4567	1425
c, Capacity [veh/h]	568	568	507		930	2740	1269	396
d1, Uniform Delay [s]	29.00	29.00	23.91		31.50	8.57	32.50	30.49
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.11	0.22
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	93.05	93.05	5.47		79.12	0.05	81.97	8.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

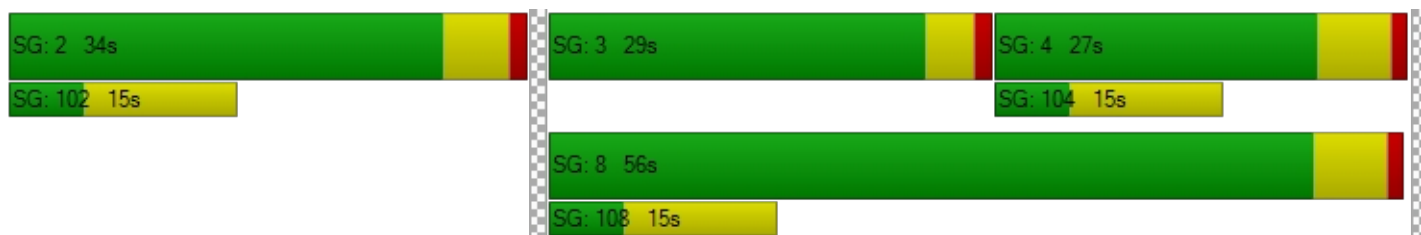
X, volume / capacity	1.17	1.17	0.61		1.17	0.27	1.18	0.83
d, Delay for Lane Group [s/veh]	122.05	122.05	29.38		110.62	8.62	114.47	39.31
Lane Group LOS	F	F	C		F	A	F	D
Critical Lane Group	Yes	No	No		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	25.92	25.92	5.85		19.63	1.94	18.24	7.24
50th-Percentile Queue Length [ft]	648.12	648.12	146.30		490.79	48.41	456.11	181.02
95th-Percentile Queue Length [veh]	37.81	37.81	9.82		29.46	3.49	27.67	11.65
95th-Percentile Queue Length [ft]	945.27	945.27	245.48		736.57	87.14	691.65	291.35

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	122.05	122.05	29.38	0.00	0.00	0.00	110.62	8.62	0.00	0.00	114.47	39.31
Movement LOS	F	F	C				F	A			F	D
d_A, Approach Delay [s/veh]	104.43			0.00			69.73			100.94		
Approach LOS	F			A			E			F		
d_I, Intersection Delay [s/veh]	91.27											
Intersection LOS	F											
Intersection V/C	1.093											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	1	1	0	1
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	52	628	17	159	528	235	62	173	22	19	703	239
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	77	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	6	0	0	6	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	114	127	295	56	8	50	98	0	26	21	61
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	825	144	454	604	243	112	271	22	45	724	300
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	217	38	119	159	64	29	71	6	12	191	79
Total Analysis Volume [veh/h]	66	868	152	478	636	256	118	285	23	47	762	316
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	11	21	0	16	26	10	10	23	0	10	23	16
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	19	19	14	27	37	8	24	24	5	21	37
g / C, Green / Cycle	0.08	0.27	0.27	0.20	0.39	0.53	0.11	0.34	0.34	0.08	0.30	0.53
(v / s)_i Volume / Saturation Flow Rate	0.05	0.21	0.12	0.17	0.16	0.20	0.04	0.10	0.02	0.03	0.27	0.25
s, saturation flow rate [veh/h]	1416	4050	1264	2750	4050	1264	2750	2831	1264	1416	2831	1264
c, Capacity [veh/h]	122	1099	343	550	1562	628	314	956	427	109	849	628
d1, Uniform Delay [s]	30.67	23.65	21.12	27.11	15.68	11.11	28.69	17.08	15.64	30.86	23.47	11.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.14
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.72	5.79	4.11	4.37	0.79	0.43	0.74	0.17	0.05	2.70	3.70	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.54	0.79	0.44	0.87	0.41	0.41	0.38	0.30	0.05	0.43	0.90	0.50
d, Delay for Lane Group [s/veh]	34.40	29.43	25.23	31.48	16.47	11.53	29.43	17.25	15.70	33.56	27.16	12.64
Lane Group LOS	C	C	C	C	B	B	C	B	B	C	C	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.13	4.58	2.26	4.00	2.39	2.28	0.89	1.53	0.23	0.79	5.79	2.86
50th-Percentile Queue Length [ft]	28.18	114.42	56.56	99.98	59.67	56.99	22.21	38.28	5.73	19.83	144.80	71.49
95th-Percentile Queue Length [veh]	2.03	8.09	4.07	7.20	4.30	4.10	1.60	2.76	0.41	1.43	9.74	5.15
95th-Percentile Queue Length [ft]	50.72	202.14	101.81	179.97	107.40	102.58	39.97	68.90	10.31	35.69	243.47	128.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.40	29.43	25.23	31.48	16.47	11.53	29.43	17.25	15.70	33.56	27.16	12.64
Movement LOS	C	C	C	C	B	B	C	B	B	C	C	B
d_A, Approach Delay [s/veh]	29.15			20.78			20.54			23.35		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.74											
Intersection LOS	C											
Intersection V/C	0.700											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type: Signalized  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 24.4  
 Level Of Service: C  
 Volume to Capacity (v/c): 0.663

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↔↔↔↔↔			↔↔↔			↔↔↔			↔↔↔		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	2	1	0	0	1	0	1	2	0	0
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	23	493	478	56	542	19	2	151	18	893	201	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	61	0	0	11	3	16	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	4	2	2	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	179	170	10	66	0	0	15	0	47	11	7
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	737	648	66	623	24	20	166	18	940	212	30
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	194	171	17	164	6	5	44	5	247	56	8
Total Analysis Volume [veh/h]	24	776	682	69	656	25	21	175	19	989	223	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	28	10	21	0	19	21	0	28	30	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	27	55	6	29	29	4	13	26	35
g / C, Green / Cycle	0.05	0.34	0.69	0.08	0.36	0.36	0.05	0.16	0.33	0.43
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.27	0.04	0.14	0.14	0.01	0.11	0.32	0.16
s, saturation flow rate [veh/h]	1573	4501	2486	1573	3146	1621	1573	1652	3056	1616
c, Capacity [veh/h]	84	1524	1643	121	1137	586	82	264	993	699
d1, Uniform Delay [s]	36.37	21.14	6.33	35.66	19.02	19.03	36.43	31.59	26.95	15.29
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.82	1.22	0.77	4.21	1.03	2.00	1.63	2.85	12.35	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

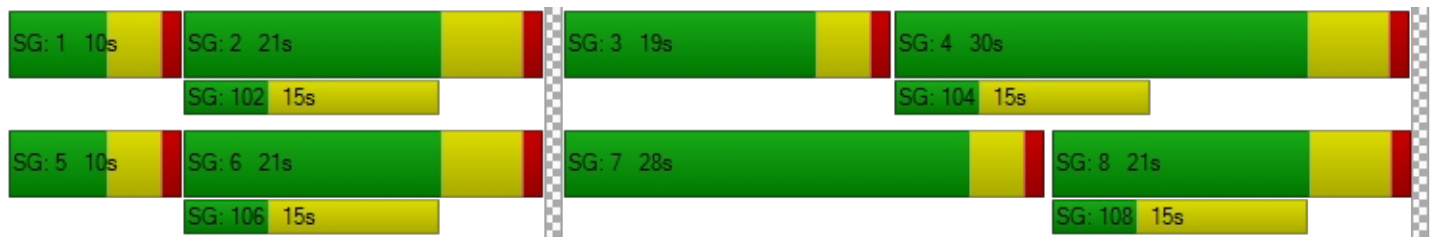
X, volume / capacity	0.28	0.51	0.42	0.57	0.39	0.40	0.26	0.66	1.00	0.36
d, Delay for Lane Group [s/veh]	38.19	22.36	7.11	39.87	20.04	21.03	38.06	34.44	39.29	15.61
Lane Group LOS	D	C	A	D	C	C	D	C	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.47	3.72	2.15	1.38	3.00	3.27	0.41	3.21	10.23	2.87
50th-Percentile Queue Length [ft]	11.85	93.03	53.63	34.53	74.98	81.64	10.37	80.28	255.75	71.63
95th-Percentile Queue Length [veh]	0.85	6.70	3.86	2.49	5.40	5.88	0.75	5.78	15.48	5.16
95th-Percentile Queue Length [ft]	21.32	167.45	96.53	62.15	134.97	146.95	18.66	144.50	386.88	128.94

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	38.19	22.36	7.11	39.87	20.35	21.03	38.06	34.44	0.00	39.29	15.61	15.61
Movement LOS	D	C	A	D	C	C	D	C		D	B	B
d_A, Approach Delay [s/veh]	15.60			22.17			34.82			34.44		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	24.35											
Intersection LOS	C											
Intersection V/C	0.663											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.716

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	311	666	199	94	376	423	268	549	140	205	660	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	55	0	0	10	3	10	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	5	0	0	6	2	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	749	0	19	850	76	137	0	0	0	0	35
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	1475	199	113	1242	504	416	549	140	205	660	131
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	388	52	30	327	133	109	144	37	54	174	34
Total Analysis Volume [veh/h]	327	1553	209	119	1307	531	438	578	147	216	695	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.6	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	23	0	11	22	14	14	26	0	10	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	27	27	7	24	38	12	20	20	8	16	16
g / C, Green / Cycle	0.14	0.38	0.38	0.10	0.34	0.54	0.17	0.29	0.29	0.11	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.11	0.34	0.15	0.04	0.29	0.37	0.14	0.13	0.10	0.07	0.15	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	443	1735	541	317	1550	716	532	1320	412	354	1059	331
d1, Uniform Delay [s]	28.75	20.39	15.77	29.33	21.39	13.82	27.98	20.25	19.72	29.51	24.35	22.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.36	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.43	7.62	2.07	0.73	5.77	4.92	3.29	0.23	0.52	1.70	0.70	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

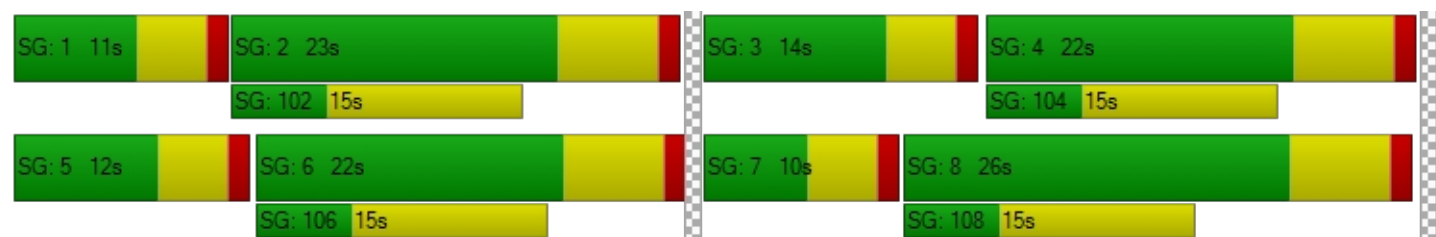
X, volume / capacity	0.74	0.90	0.39	0.37	0.84	0.74	0.82	0.44	0.36	0.61	0.66	0.42
d, Delay for Lane Group [s/veh]	31.17	28.00	17.84	30.06	27.16	18.74	31.27	20.48	20.24	31.21	25.05	23.70
Lane Group LOS	C	C	B	C	C	B	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.59	8.05	2.44	0.91	6.62	6.34	3.50	2.34	1.78	1.70	3.24	1.85
50th-Percentile Queue Length [ft]	64.64	201.24	61.08	22.66	165.62	158.43	87.51	58.57	44.50	42.38	80.99	46.26
95th-Percentile Queue Length [veh]	4.65	12.70	4.40	1.63	10.85	10.47	6.30	4.22	3.20	3.05	5.83	3.33
95th-Percentile Queue Length [ft]	116.35	317.56	109.95	40.78	271.15	261.64	157.52	105.42	80.09	76.29	145.77	83.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.17	28.00	17.84	30.06	27.16	18.74	31.27	20.48	20.24	31.21	25.05	23.70
Movement LOS	C	C	B	C	C	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	27.48			25.05			24.51			26.14		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.95											
Intersection LOS	C											
Intersection V/C	0.716											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 46: Hellman Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	10.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.377

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	36	146	63	66	205
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	7	6	0	7	5
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	375	0	0	272
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	43	527	63	73	482
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	11	139	17	19	127
Total Analysis Volume [veh/h]	12	45	555	66	77	507
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.8	0.0	4.8	0.0	0.0	4.8
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	24	0	36	0	0	36
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	22	22	34	34	34	34
g / C, Green / Cycle	0.37	0.37	0.57	0.57	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.01	0.04	0.21	0.22	0.12	0.34
s, saturation flow rate [veh/h]	1416	1264	1487	1433	638	1487
c, Capacity [veh/h]	519	463	843	812	395	843
d1, Uniform Delay [s]	12.14	12.48	7.12	7.19	11.08	8.55
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	0.42	1.24	1.37	1.10	3.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.02	0.10	0.37	0.38	0.20	0.60
d, Delay for Lane Group [s/veh]	12.22	12.89	8.36	8.56	12.18	11.72
Lane Group LOS	B	B	A	A	B	B
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.10	0.39	1.81	1.85	0.66	3.73
50th-Percentile Queue Length [ft]	2.48	9.76	45.37	46.19	16.51	93.26
95th-Percentile Queue Length [veh]	0.18	0.70	3.27	3.33	1.19	6.72
95th-Percentile Queue Length [ft]	4.46	17.57	81.67	83.15	29.71	167.88

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	12.22	12.89	8.45	8.56	12.18	11.72
Movement LOS	B	B	A	A	B	B
d_A, Approach Delay [s/veh]	12.75		8.46		11.78	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	10.19					
Intersection LOS	B					
Intersection V/C	0.377					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 47: Hellman Ave/Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	9.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.474

**Intersection Setup**

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	188	510	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	11	59	62	78	53
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	23	19	17	23	22	20
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	329	558	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	30	76	602	1168	73
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	8	20	158	307	19
Total Analysis Volume [veh/h]	36	32	80	634	1229	77
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.8	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	17	0	0	43	43	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	1.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	15	15	41	41	41	41
g / C, Green / Cycle	0.25	0.25	0.68	0.68	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.24	0.43	0.44	0.45
s, saturation flow rate [veh/h]	1416	1264	335	1487	1487	1457
c, Capacity [veh/h]	354	316	257	1016	1016	995
d1, Uniform Delay [s]	17.32	17.31	13.75	5.24	5.36	5.45
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.57	0.64	3.13	2.89	3.13	3.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.10	0.10	0.31	0.62	0.64	0.66
d, Delay for Lane Group [s/veh]	17.89	17.95	16.88	8.13	8.49	8.83
Lane Group LOS	B	B	B	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.39	0.36	0.91	2.96	3.14	3.23
50th-Percentile Queue Length [ft]	9.87	8.93	22.68	74.00	78.52	80.74
95th-Percentile Queue Length [veh]	0.71	0.64	1.63	5.33	5.65	5.81
95th-Percentile Queue Length [ft]	17.77	16.07	40.83	133.20	141.34	145.33

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	17.89	17.95	16.88	8.13	8.65	8.83
Movement LOS	B	B	B	A	A	A
d_A, Approach Delay [s/veh]	17.92		9.11		8.66	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	9.12					
Intersection LOS	A					
Intersection V/C	0.474					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 66: Archibald Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	166.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.278

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Eucalyptus			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Eucalyptus			Eucalyptus Ave		
Base Volume Input [veh/h]	0	1326	27	14	650	0	0	0	0	10	0	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	105	15	0	0	61	304	61	0	18	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	3	12	13	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	201	1017	22	88	1425	38	38	54	283	127	33	88
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	306	2362	49	102	2139	354	112	54	301	137	33	138
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	622	13	27	563	93	29	14	79	36	9	36
Total Analysis Volume [veh/h]	322	2486	52	107	2252	373	118	57	317	144	35	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	0.0	4.8	3.6	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	57	0	10	52	0	0	23	15	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	55	55	8	50	50	21	21	21	21
g / C, Green / Cycle	0.14	0.61	0.61	0.09	0.56	0.56	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.20	0.76	0.76	0.07	0.78	0.82	0.11	0.03	0.22	0.25
s, saturation flow rate [veh/h]	1597	1676	1664	1597	1676	1596	1079	1676	1425	1273
c, Capacity [veh/h]	231	1025	1017	142	931	887	101	391	333	355
d1, Uniform Delay [s]	38.50	17.50	17.50	40.04	20.00	20.00	44.81	27.38	34.02	35.72
k, delay calibration	0.16	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.21	0.28
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	186.73	115.84	119.72	7.84	190.58	222.04	94.68	0.17	22.21	19.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.40	1.24	1.25	0.75	1.41	1.48	1.16	0.15	0.95	0.91
d, Delay for Lane Group [s/veh]	225.23	133.34	137.22	47.88	210.58	242.04	139.50	27.55	56.23	55.37
Lane Group LOS	F	F	F	D	F	F	F	C	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	16.83	49.79	50.52	2.54	65.59	70.21	4.87	0.95	8.50	8.83
50th-Percentile Queue Length [ft]	420.71	1244.67	1263.11	63.46	1639.86	1755.31	121.63	23.81	212.62	220.65
95th-Percentile Queue Length [veh]	26.84	72.21	73.51	4.57	99.28	108.06	8.76	1.71	13.29	13.70
95th-Percentile Queue Length [ft]	671.05	1805.26	1837.84	114.24	2481.95	2701.59	218.93	42.86	332.19	342.46

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	225.23	135.24	137.22	47.88	223.70	242.04	139.50	27.55	56.23	55.37	55.37	55.37
Movement LOS	F	F	F	D	F	F	F	C	E	E	E	E
d_A, Approach Delay [s/veh]	145.41			219.32			72.88			55.37		
Approach LOS	F			F			E			E		
d_I, Intersection Delay [s/veh]	166.80											
Intersection LOS	F											
Intersection V/C	1.278											

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Opening Year 2023 With Project PM

Vistro File: V:\...\20180201\_PHF&LTrev-  
Exst+cum23+Proj.vistro

Scenario 8 Ex+Cumm+Proj2023 PM Peak

Report File: V:\...\Future 2023 With Proj PM.pdf

2/8/2018

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Euclid Ave / Philadelphia St	Signalized	HCM 2010	WB Thru	0.768	31.0	C
2	Grove Ave / Philadelphia St	Signalized	HCM 2010	NB Left	0.648	21.0	C
3	Archibald Ave / Philadelphia St	Signalized	HCM 2010	WB Left	0.407	19.3	B
4	SR60 WB Ramp / Euclid Ave	Signalized	HCM 2010	SB Right	0.762	18.3	B
5	SR60 EB Ramp / Euclid Ave	Signalized	HCM 2010	EB Right	0.874	23.0	C
6	SR60 WB Ramp / Grove Ave	Signalized	HCM 2010	SB Right	0.868	21.0	C
7	SR60 EB Ramp / Grove Ave	Signalized	HCM 2010	NB Right	0.852	29.1	C
8	SR60 WB Ramp / Archibald Ave	Signalized	HCM 2010	WB Left	0.826	22.4	C
9	SR60 EB Ramp / Archibald Ave	Signalized	HCM 2010	SB Left	0.999	37.7	D
10	Euclid Ave / Walnut St	Signalized	HCM 2010	EB Left	0.748	26.0	C
11	Grove Ave / Walnut Ave	Signalized	HCM 2010	EB Left	0.512	20.1	C
12	Archibald Ave / Walnut Ave	Signalized	HCM 2010	WB Right	0.550	8.9	A
13	Euclid Ave / Riverside Dr	Signalized	HCM 2010	EB Thru	0.920	48.0	D
14	Grove Ave / Riverside Dr	Signalized	HCM 2010	EB Left	0.452	16.7	B
15	Archibald Ave / Riverside Dr	Signalized	HCM 2010	WB Left	0.721	26.5	C
16	Euclid Ave / Chino Ave	Signalized	HCM 2010	NB Thru	1.148	85.1	F
17	Grove Ave / Chino Ave	All-way stop	HCM 2010	NB Thru	1.404	146.5	F
18	Archibald Ave / Chino Ave	Signalized	HCM 2010	EB Left	0.782	29.3	C
19	Euclid Ave / Schaefer Ave	Signalized	HCM 2010	NB Left	0.846	37.3	D
20	Grove Ave / Schaefer Ave	All-way stop	HCM 2010	NB Thru	0.698	17.2	C
21	SR71 SB Ramp / Grand Ave	Signalized	HCM 2010	SB Right	1.090	67.3	E
22	SR71 NB Ramp / Grand Ave	Signalized	HCM 2010	EB Left	1.121	111.0	F
23	Ramona Ave / Edison Ave	Signalized	HCM 2010	WB Left	0.806	36.8	D
24	Central Ave / Edison Ave	Signalized	HCM 2010	EB Right	0.924	61.1	E
25	Mountain Ave/ Edison Ave	Signalized	HCM 2010	SB Left	0.556	15.6	B
26	Euclid Ave / Edison Ave	Signalized	HCM 2010	EB Thru	0.931	42.5	D
27	Grove Ave / Edison Ave	All-way stop	HCM 2010	EB Thru	2.521	401.6	F
28	Archibald Ave / Edison Ave	Signalized	HCM 2010	SB Thru	1.220	153.6	F
29	Milliken Ave / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	WB Left	1.262	175.2	F
30	I-15 SB Ramp / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	SB Right	1.098	79.8	E

31	I-15 NB Ramp / Cantu-Galleano Ranch Rd	Signalized	HCM 2010	EB Right	0.380	93.7	F
32	Euclid Ave / Eucalyptus Ave	Signalized	HCM 2010	SB Left	0.862	27.5	C
33	Grove Ave / Eucalyptus Ave	Two-way stop	HCM 2010	WB Left	0.172	82.5	F
34	Carpenter Ave / Eucalyptus Ave	Two-way stop	HCM 2010	NB Left	0.147	14.4	B
35	Euclid Ave / Merrill Ave	Signalized	HCM 2010	WB Right	0.576	30.4	C
36	Grove Ave / Merrill Ave	All-way stop	HCM 2010	WB Left	2.026	285.7	F
37	Carpenter Ave / Merrill Ave	Two-way stop	HCM 2010	SB Left	71.313	10,000.0	F
38	Archibald Ave / Merrill Ave	Signalized	HCM 2010	NB Left	0.938	55.9	E
39	Archibald Ave / Limonite Ave	Signalized	HCM 2010	SB Left	0.968	39.5	D
40	Hamner Ave / Limonite Ave	Signalized	HCM 2010	EB Thru	1.104	84.8	F
41	I-15 SB Ramp / Limonite Ave	Signalized	HCM 2010	EB Right	1.580	137.6	F
42	I-15 NB Ramp / Limonite Ave	Signalized	HCM 2010	EB Left	1.130	95.5	F
43	Euclid Ave / Kimball Ave	Signalized	HCM 2010	SB Left	0.777	26.9	C
44	Euclid Ave / Pine Ave	Signalized	HCM 2010	EB Thru	0.856	25.5	C
45	Archibald Ave / Schleisman Rd	Signalized	HCM 2010	WB Left	0.689	28.8	C
46	Hellman Ave/Eucalyptus Ave	Signalized	HCM 2010	NB Right	0.450	10.7	B
47	Hellman Ave/Merrill Ave	Signalized	HCM 2010	SB Right	0.963	34.7	C
66	Archibald Ave/Eucalyptus Ave	Signalized	HCM 2010	NB Left	1.354	208.0	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	223	895	174	95	956	99	125	426	103	157	435	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	18	0	0	6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	4	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	38	0	0	28	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	955	174	95	994	99	125	426	103	157	435	89
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	251	46	25	262	26	33	112	27	41	114	23
Total Analysis Volume [veh/h]	235	1005	183	100	1046	104	132	448	108	165	458	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	22	0	14	22	0	9	25	0	9	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
g_i, Effective Green Time [s]	12	25	25	7	20	20	32	23	23	32	23
g / C, Green / Cycle	0.17	0.36	0.36	0.10	0.29	0.29	0.46	0.33	0.33	0.46	0.33
(v / s)_i Volume / Saturation Flow Rate	0.15	0.31	0.13	0.06	0.24	0.24	0.14	0.17	0.17	0.17	0.33
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1666	965	1676	1566	973	1693
c, Capacity [veh/h]	274	1149	513	156	915	477	318	549	513	462	564
d1, Uniform Delay [s]	28.18	20.92	16.45	30.38	23.34	23.34	17.49	19.08	19.10	14.57	23.10
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.28
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.70	9.36	1.93	4.30	8.42	15.06	0.87	0.77	0.83	0.47	23.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

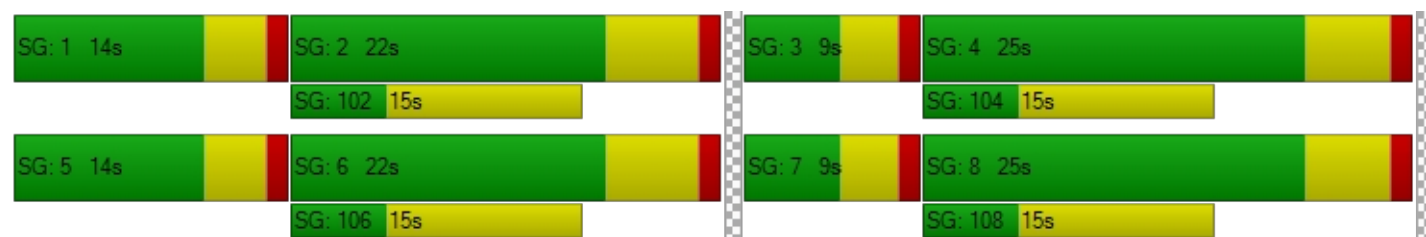
X, volume / capacity	0.86	0.87	0.36	0.64	0.83	0.83	0.42	0.52	0.52	0.36	0.98
d, Delay for Lane Group [s/veh]	35.87	30.28	18.38	34.68	31.76	38.40	18.36	19.85	19.94	15.03	46.66
Lane Group LOS	D	C	B	C	C	D	B	B	B	B	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	4.10	8.16	2.18	1.70	6.29	7.45	1.25	3.48	3.28	1.56	11.57
50th-Percentile Queue Length [ft]	102.62	204.10	54.62	42.59	157.14	186.20	31.31	87.05	82.07	39.09	289.26
95th-Percentile Queue Length [veh]	7.39	12.85	3.93	3.07	10.40	11.92	2.25	6.27	5.91	2.81	17.15
95th-Percentile Queue Length [ft]	184.72	321.25	98.32	76.66	259.93	298.10	56.36	156.69	147.72	70.36	428.72

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	35.87	30.28	18.38	34.68	33.61	38.40	18.36	19.88	19.94	15.03	46.66	46.66
Movement LOS	D	C	B	C	C	D	B	B	B	B	D	D
d_A, Approach Delay [s/veh]	29.67			34.09			19.60			39.38		
Approach LOS	C			C			B			D		
d_I, Intersection Delay [s/veh]	31.03											
Intersection LOS	C											
Intersection V/C	0.768											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	181	681	76	104	1078	112	117	245	268	242	338	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	44	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	55	0	0	41	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	182	780	76	104	1133	112	117	245	268	242	338	86
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	205	20	27	298	29	31	64	71	64	89	23
Total Analysis Volume [veh/h]	192	821	80	109	1193	118	123	258	282	255	356	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	30	0	10	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	8	29	29	7	28	28	28	19	19	28	19	19
g / C, Green / Cycle	0.11	0.42	0.42	0.09	0.41	0.41	0.40	0.27	0.27	0.40	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.19	0.04	0.27	0.27	0.12	0.15	0.19	0.25	0.14	0.14
s, saturation flow rate [veh/h]	3101	3192	1602	3101	3192	1600	1048	1676	1482	1011	1676	1625
c, Capacity [veh/h]	338	1342	673	293	1296	650	448	454	401	396	465	451
d1, Uniform Delay [s]	29.62	14.48	14.49	29.74	17.00	17.00	16.52	21.99	22.98	19.98	21.14	21.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.15	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.50	1.08	2.15	0.78	2.82	5.52	0.33	1.12	2.25	2.41	0.79	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

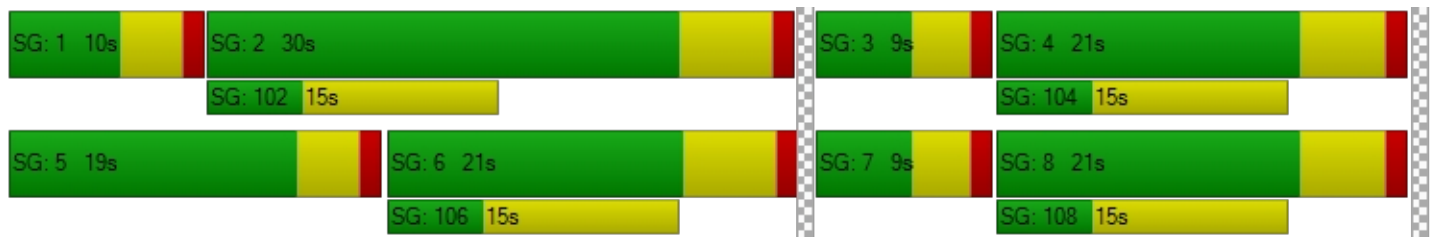
X, volume / capacity	0.57	0.45	0.45	0.37	0.67	0.67	0.27	0.57	0.70	0.64	0.49	0.49
d, Delay for Lane Group [s/veh]	31.13	15.56	16.64	30.52	19.82	22.52	16.85	23.12	25.23	22.38	21.93	21.98
Lane Group LOS	C	B	B	C	B	C	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.48	3.05	3.27	0.83	5.30	5.80	1.28	3.45	4.02	3.08	2.91	2.84
50th-Percentile Queue Length [ft]	37.01	76.14	81.67	20.63	132.51	145.06	31.94	86.14	100.62	77.03	72.63	70.93
95th-Percentile Queue Length [veh]	2.66	5.48	5.88	1.49	9.08	9.75	2.30	6.20	7.24	5.55	5.23	5.11
95th-Percentile Queue Length [ft]	66.62	137.05	147.00	37.13	226.90	243.83	57.49	155.05	181.12	138.66	130.73	127.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.13	15.85	16.64	30.52	20.54	22.52	16.85	23.12	25.23	22.38	21.95	21.98
Movement LOS	C	B	B	C	C	C	B	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.59			21.47			22.85			22.11		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	21.01											
Intersection LOS	C											
Intersection V/C	0.648											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.407

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	142	342	62	38	650	35	48	316	340	259	170	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	25	6	0	8	0	0	0	1	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	2	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	299	0	0	451	0	0	0	11	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	668	68	38	1111	35	48	316	352	261	170	18
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	176	18	10	292	9	13	83	93	69	45	5
Total Analysis Volume [veh/h]	165	703	72	40	1169	37	51	333	371	275	179	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	3	3	8	8	7	4	4
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	4.8	3.2	4.8	3.0	3.0	4.4	4.4	3.0	4.4	4.4
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	12	22	22	17	27	9	9	21	21	10	22	22
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	10	0	10	10
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	10	37	47	5	32	39	5	12	24	8	15	22
g / C, Green / Cycle	0.14	0.52	0.67	0.07	0.45	0.55	0.07	0.18	0.35	0.11	0.22	0.32
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.05	0.01	0.26	0.03	0.02	0.10	0.26	0.09	0.06	0.01
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	443	2387	908	221	2060	748	229	567	453	354	696	408
d1, Uniform Delay [s]	27.16	9.42	4.86	30.59	14.18	8.12	30.53	26.43	22.04	30.13	22.67	18.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.16	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	0.31	0.17	0.39	1.14	0.03	0.49	0.97	5.51	3.67	0.19	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

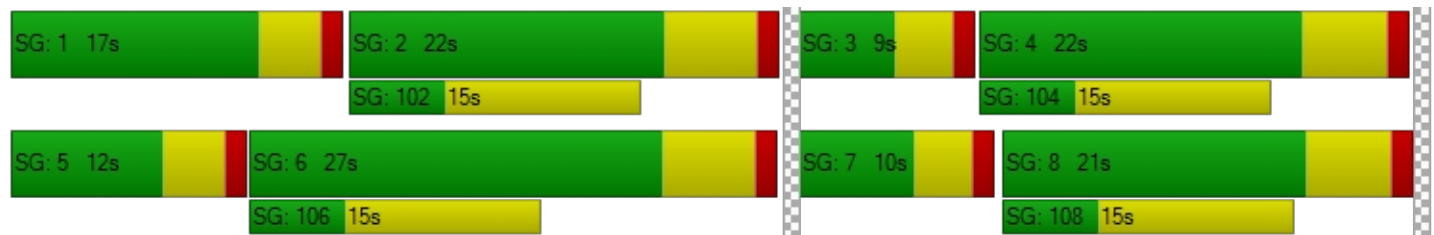
X, volume / capacity	0.37	0.29	0.08	0.18	0.57	0.05	0.22	0.59	0.82	0.78	0.26	0.05
d, Delay for Lane Group [s/veh]	27.68	9.74	5.03	30.98	15.32	8.14	31.02	27.40	27.55	33.80	22.86	18.11
Lane Group LOS	C	A	A	C	B	A	C	C	C	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.19	1.71	0.32	0.31	4.06	0.23	0.40	2.43	5.68	2.28	1.14	0.21
50th-Percentile Queue Length [ft]	29.84	42.76	8.10	7.76	101.40	5.74	9.90	60.76	141.95	56.89	28.61	5.21
95th-Percentile Queue Length [veh]	2.15	3.08	0.58	0.56	7.30	0.41	0.71	4.37	9.59	4.10	2.06	0.38
95th-Percentile Queue Length [ft]	53.71	76.97	14.57	13.97	182.53	10.34	17.82	109.36	239.65	102.40	51.49	9.38

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.68	9.74	5.03	30.98	15.32	8.14	31.02	27.40	27.55	33.80	22.86	18.11
Movement LOS	C	A	A	C	B	A	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	12.53			15.61			27.72			29.03		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.30											
Intersection LOS	B											
Intersection V/C	0.407											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.762

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	212	982	0	0	856	491	0	0	0	432	0	334
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	18	0	0	6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	15	4	0	0	4	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	359	49	0	0	31	0	0	0	0	57	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	596	1053	0	0	897	491	0	0	0	489	0	334
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	157	277	0	0	236	129	0	0	0	129	0	88
Total Analysis Volume [veh/h]	627	1108	0	0	944	517	0	0	0	515	0	352
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	16	44	0	0	28	0	0	0	0	0	16	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	14	42	26	26		14	14	14
g / C, Green / Cycle	0.23	0.70	0.43	0.43		0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.20	0.35	0.30	0.36		0.18	0.19	0.20
s, saturation flow rate [veh/h]	3101	3192	3192	1425		1597	1551	1425
c, Capacity [veh/h]	723	2234	1383	618		373	362	333
d1, Uniform Delay [s]	22.10	4.14	13.68	15.12		21.62	21.71	21.97
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	3.31	0.79	2.74	12.77		3.80	4.22	5.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

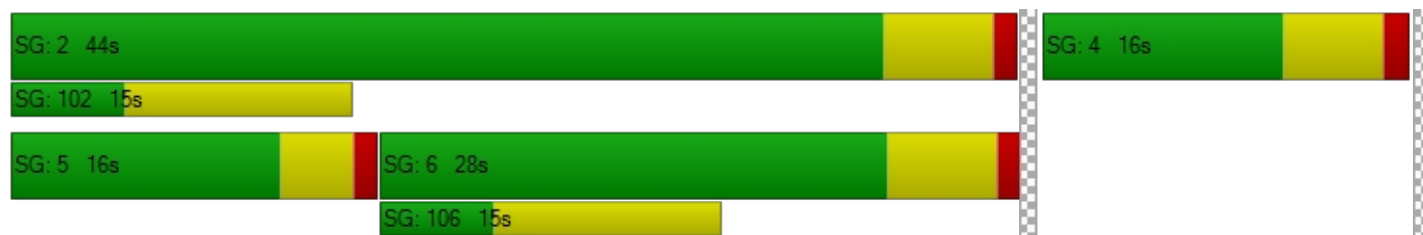
X, volume / capacity	0.87	0.50	0.68	0.84		0.79	0.80	0.85
d, Delay for Lane Group [s/veh]	25.41	4.93	16.42	27.89		25.42	25.93	27.86
Lane Group LOS	C	A	B	C		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	4.04	1.66	4.62	7.15		3.80	3.81	3.85
50th-Percentile Queue Length [ft]	101.06	41.39	115.50	178.63		95.09	95.24	96.27
95th-Percentile Queue Length [veh]	7.28	2.98	8.15	11.53		6.85	6.86	6.93
95th-Percentile Queue Length [ft]	181.90	74.50	203.63	288.22		171.17	171.42	173.28

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	25.41	4.93	0.00	0.00	16.42	27.89	0.00	0.00	0.00	25.64	25.93	27.51
Movement LOS	C	A			B	C				C	C	C
d_A, Approach Delay [s/veh]	12.33			20.48			0.00			26.38		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	18.26											
Intersection LOS	B											
Intersection V/C	0.762											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.874

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							+					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	843	439	286	1007	0	347	2	234	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	6	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	4	0	0	0	19	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	408	279	0	88	0	0	0	105	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1298	718	286	1105	0	347	2	360	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	342	189	75	291	0	91	1	95	0	0	0
Total Analysis Volume [veh/h]	0	1366	756	301	1163	0	365	2	379	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.0	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	33	0	9	42	0	0	18	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	L	C	L	C	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	31	31	7	40	16	16	
g / C, Green / Cycle	0.52	0.52	0.12	0.67	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.43	0.51	0.10	0.36	0.23	0.27	
s, saturation flow rate [veh/h]	3192	1482	3101	3192	1597	1426	
c, Capacity [veh/h]	1649	766	362	2128	426	380	
d1, Uniform Delay [s]	12.25	14.31	25.93	5.24	20.91	22.00	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.95	29.59	5.00	1.01	5.08	21.96	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.83	0.99	0.83	0.55	0.86	1.00	
d, Delay for Lane Group [s/veh]	17.20	43.90	30.92	6.26	26.00	43.96	
Lane Group LOS	B	D	C	A	C	F	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	6.77	13.58	2.15	2.33	4.81	6.93	
50th-Percentile Queue Length [ft]	169.15	339.38	53.72	58.22	120.13	173.19	
95th-Percentile Queue Length [veh]	11.03	19.62	3.87	4.19	8.40	11.26	
95th-Percentile Queue Length [ft]	275.80	490.44	96.69	104.79	210.00	281.38	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	17.20	43.90	30.92	6.26	0.00	26.00	43.96	43.96	0.00	0.00	0.00
Movement LOS		B	D	C	A		C	D	D			
d_A, Approach Delay [s/veh]	26.71			11.33			35.17			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	22.97											
Intersection LOS	C											
Intersection V/C	0.874											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.868

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	160	807	0	0	922	680	0	0	0	205	2	306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	35	45	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	17	55	0	0	41	0	0	0	0	4	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	907	0	0	977	680	0	0	0	209	2	306
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	239	0	0	257	179	0	0	0	55	1	81
Total Analysis Volume [veh/h]	223	955	0	0	1028	716	0	0	0	220	2	322
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	11	44	0	0	33	0	0	0	0	0	16	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	9	42	31	31		14	14
g / C, Green / Cycle	0.15	0.70	0.52	0.52		0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.14	0.30	0.32	0.50		0.14	0.23
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	239	2234	1649	736		373	333
d1, Uniform Delay [s]	25.19	3.85	10.34	14.09		20.48	22.78
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	14.84	0.60	1.79	27.10		1.52	16.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

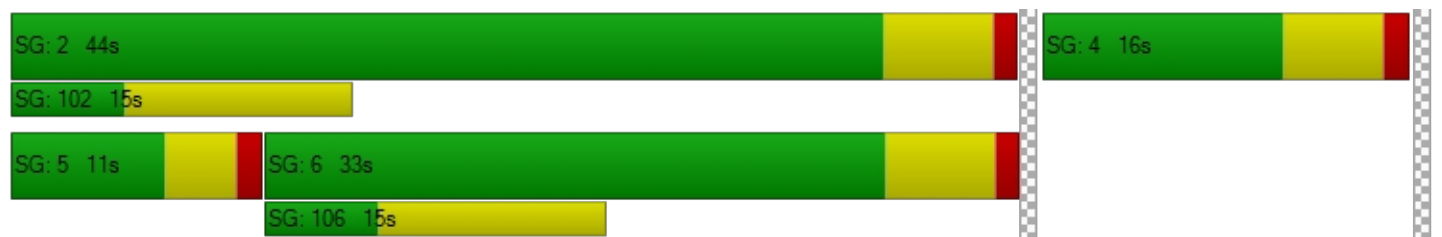
X, volume / capacity	0.93	0.43	0.62	0.97		0.60	0.97
d, Delay for Lane Group [s/veh]	40.04	4.45	12.12	41.19		22.00	39.34
Lane Group LOS	D	A	B	D		C	D
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	3.74	1.16	3.81	12.00		2.59	5.46
50th-Percentile Queue Length [ft]	93.39	29.10	95.35	300.12		64.79	136.42
95th-Percentile Queue Length [veh]	6.72	2.09	6.87	17.69		4.67	9.29
95th-Percentile Queue Length [ft]	168.10	52.37	171.63	442.17		116.63	232.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	40.04	4.45	0.00	0.00	12.12	41.19	0.00	0.00	0.00	22.00	22.00	39.34
Movement LOS	D	A			B	D				C	C	D
d_A, Approach Delay [s/veh]	11.19			24.06			0.00			32.27		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	20.97											
Intersection LOS	C											
Intersection V/C	0.868											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.852

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↕↔			↔↕			↔↕					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	581	251	416	709	0	380	1	226	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	80	0	0	14	0	0	0	12	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	72	6	0	45	0	0	0	17	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	733	257	416	768	0	380	1	255	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	193	68	109	202	0	100	0	67	0	0	0
Total Analysis Volume [veh/h]	0	772	271	438	808	0	400	1	268	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	27	0	22	49	0	0	21	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	25	25	20	47	19	19	
g / C, Green / Cycle	0.36	0.36	0.29	0.67	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.31	0.33	0.27	0.25	0.25	0.19	
s, saturation flow rate [veh/h]	1676	1597	1597	3192	1597	1425	
c, Capacity [veh/h]	599	570	456	2143	433	387	
d1, Uniform Delay [s]	21.00	21.48	24.61	5.06	24.81	22.88	
k, delay calibration	0.50	0.50	0.19	0.50	0.15	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	15.93	21.59	17.80	0.51	11.29	2.23	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.87	0.91	0.96	0.38	0.93	0.69	
d, Delay for Lane Group [s/veh]	36.92	43.06	42.40	5.57	36.09	25.11	
Lane Group LOS	D	D	D	A	D	C	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	9.58	10.51	8.49	1.68	7.16	3.81	
50th-Percentile Queue Length [ft]	239.62	262.87	212.16	41.96	178.93	95.36	
95th-Percentile Queue Length [veh]	14.66	15.83	13.26	3.02	11.54	6.87	
95th-Percentile Queue Length [ft]	366.55	395.82	331.59	75.53	288.62	171.64	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	38.92	43.06	42.40	5.57	0.00	36.09	36.09	25.11	0.00	0.00	0.00
Movement LOS		D	D	D	A		D	D	C			
d_A, Approach Delay [s/veh]	39.99			18.52			31.70			0.00		
Approach LOS	D			B			C			A		
d_I, Intersection Delay [s/veh]	29.07											
Intersection LOS	C											
Intersection V/C	0.852											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	22.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration	⇐			⇐						⇐+⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	322	456	0	0	993	339	0	0	0	304	5	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	35	0	0	11	0	0	0	0	27	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	3	0	0	0	0	15	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	320	332	0	0	504	0	0	0	0	204	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	642	825	0	0	1511	339	0	0	0	550	5	150
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	169	217	0	0	398	89	0	0	0	145	1	39
Total Analysis Volume [veh/h]	676	868	0	0	1591	357	0	0	0	579	5	158
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	16	46	0	0	30	0	0	0	0	0	14	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	14	44	28	28		12	12	12
g / C, Green / Cycle	0.23	0.73	0.47	0.47		0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.22	0.19	0.41	0.42		0.18	0.18	0.11
s, saturation flow rate [veh/h]	3101	4567	3192	1528		1597	1598	1425
c, Capacity [veh/h]	723	3349	1490	713		319	320	285
d1, Uniform Delay [s]	22.55	2.63	14.39	14.84		23.50	23.49	21.59
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	6.31	0.19	7.30	17.81		10.25	10.22	1.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.93	0.26	0.87	0.91		0.91	0.91	0.55
d, Delay for Lane Group [s/veh]	28.86	2.82	21.68	32.64		33.74	33.72	23.28
Lane Group LOS	C	A	C	C		C	C	C
Critical Lane Group	Yes	No	No	Yes		Yes	No	No
50th-Percentile Queue Length [veh]	4.71	0.45	7.59	9.79		4.48	4.48	1.91
50th-Percentile Queue Length [ft]	117.85	11.34	189.66	244.87		111.99	112.01	47.74
95th-Percentile Queue Length [veh]	8.27	0.82	12.10	14.93		7.95	7.95	3.44
95th-Percentile Queue Length [ft]	206.87	20.41	302.59	373.19		198.77	198.79	85.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.86	2.82	0.00	0.00	23.70	32.64	0.00	0.00	0.00	33.73	33.72	23.28
Movement LOS	C	A			C	C				C	C	C
d_A, Approach Delay [s/veh]	14.22			25.34			0.00			31.51		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	22.36											
Intersection LOS	C											
Intersection V/C	0.826											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	37.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.999

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	200.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	712	396	306	985	0	79	1	450	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	35	86	0	38	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	12	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	567	232	10	710	0	0	0	239	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1316	726	316	1751	0	79	1	689	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	346	191	83	461	0	21	0	181	0	0	0
Total Analysis Volume [veh/h]	0	1385	764	333	1843	0	83	1	725	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	31	0	13	44	0	0	16	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	29	29	11	42	14	14	14	
g / C, Green / Cycle	0.48	0.48	0.18	0.70	0.23	0.23	0.23	
(v / s)_i Volume / Saturation Flow Rate	0.43	0.54	0.21	0.40	0.05	0.25	0.25	
s, saturation flow rate [veh/h]	3192	1425	1597	4567	1597	1426	1425	
c, Capacity [veh/h]	1543	689	293	3197	373	333	333	
d1, Uniform Delay [s]	14.15	15.50	24.50	4.53	18.60	23.00	23.00	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	8.62	68.27	71.45	0.76	0.30	52.15	52.22	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

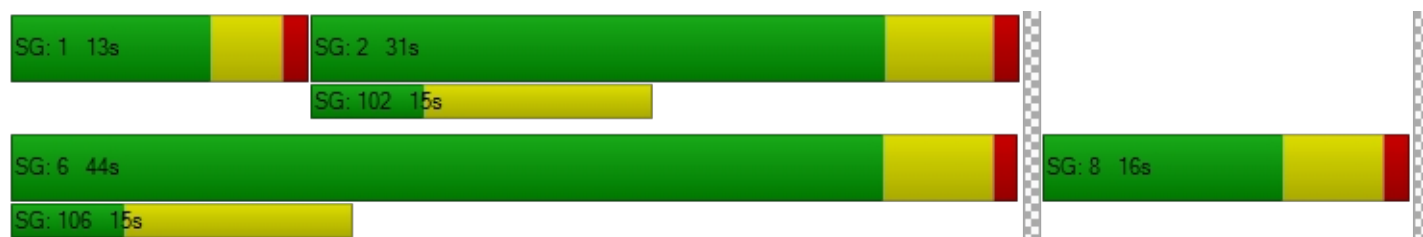
X, volume / capacity	0.90	1.11	1.14	0.58	0.22	1.09	1.09	
d, Delay for Lane Group [s/veh]	22.77	83.77	95.95	5.29	18.90	75.15	75.22	
Lane Group LOS	C	F	F	A	B	F	F	
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh]	8.30	20.09	9.49	1.94	0.86	8.91	8.92	
50th-Percentile Queue Length [ft]	207.47	502.29	237.29	48.45	21.44	222.86	222.93	
95th-Percentile Queue Length [veh]	13.02	29.54	15.43	3.49	1.54	14.43	14.44	
95th-Percentile Queue Length [ft]	325.58	738.47	385.65	87.22	38.58	360.83	360.96	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	22.77	83.77	95.95	5.29	0.00	18.90	75.15	75.18	0.00	0.00	0.00
Movement LOS		C	F	F	A		B	E	F			
d_A, Approach Delay [s/veh]	44.46			19.16			69.41			0.00		
Approach LOS	D			B			E			A		
d_I, Intersection Delay [s/veh]	37.67											
Intersection LOS	D											
Intersection V/C	0.999											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.748

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TTT			TTTT			TT			TT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	118	995	63	276	805	145	115	335	132	87	262	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	27	0	0	8	0	0	0	1	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	777	0	0	193	0	0	0	12	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	1818	63	276	1029	145	115	335	145	87	262	146
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	478	17	73	271	38	30	88	38	23	69	38
Total Analysis Volume [veh/h]	126	1914	66	291	1083	153	121	353	153	92	276	154
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	46	0	12	47	0	0	22	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.2	2.8	0.0	1.2	2.8	0.0	0.0	2.8	0.0	0.0	2.8	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.20	3.80	3.80	2.20	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.20	2.80	2.80	1.20	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
g_i, Effective Green Time [s]	9	42	42	10	43	43	18	18	18	18	18	18
g / C, Green / Cycle	0.11	0.53	0.53	0.12	0.54	0.54	0.23	0.23	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.09	0.46	0.46	0.11	0.27	0.12	0.16	0.18	0.18	0.13	0.15	0.16
s, saturation flow rate [veh/h]	1416	2831	1462	2750	4050	1264	762	1487	1337	710	1487	1312
c, Capacity [veh/h]	156	1493	771	337	2187	683	151	338	304	127	338	299
d1, Uniform Delay [s]	34.78	16.56	16.61	34.44	11.55	9.63	38.41	29.04	29.12	39.16	28.14	28.27
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.51	7.36	13.34	6.61	0.80	0.76	9.55	3.98	4.66	7.59	2.27	2.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.87	0.88	0.86	0.50	0.22	0.80	0.78	0.79	0.72	0.67	0.68
d, Delay for Lane Group [s/veh]	44.29	23.92	29.94	41.05	12.36	10.39	47.96	33.02	33.78	46.75	30.41	31.04
Lane Group LOS	D	C	C	D	B	B	D	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	2.69	10.19	11.86	2.94	3.56	1.34	2.68	4.83	4.46	2.01	3.89	3.58
50th-Percentile Queue Length [ft]	67.13	254.70	296.40	73.48	88.88	33.56	67.11	120.73	111.59	50.13	97.31	89.41
95th-Percentile Queue Length [veh]	4.83	15.42	17.50	5.29	6.40	2.42	4.83	8.43	7.93	3.61	7.01	6.44
95th-Percentile Queue Length [ft]	120.84	385.57	437.58	132.26	159.98	60.42	120.79	210.83	198.21	90.23	175.16	160.94

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.29	25.84	29.94	41.05	12.36	10.39	47.96	33.21	33.78	46.75	30.53	31.04
Movement LOS	D	C	C	D	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	27.07			17.63			36.20			33.54		
Approach LOS	C			B			D			C		
d_I, Intersection Delay [s/veh]	25.96											
Intersection LOS	C											
Intersection V/C	0.748											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	20.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.512

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↻↵			↵↻↵			↵↻↵			↵↻↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	63	506	34	179	495	141	128	257	52	19	153	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	80	2	0	26	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	78	0	0	61	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	664	36	179	582	141	128	257	52	20	153	112
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	175	9	47	153	37	34	68	14	5	40	29
Total Analysis Volume [veh/h]	68	699	38	188	613	148	135	271	55	21	161	118
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	13	24	0	15	26	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	6	31	31	11	36	36	9	16	16	22	11	11
g / C, Green / Cycle	0.08	0.45	0.45	0.16	0.52	0.52	0.12	0.23	0.23	0.31	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.22	0.12	0.23	0.23	0.08	0.10	0.10	0.02	0.09	0.09
s, saturation flow rate [veh/h]	1597	1676	1713	1597	1676	1630	1597	1676	1580	1092	1676	1451
c, Capacity [veh/h]	135	748	765	248	867	843	194	382	360	390	272	236
d1, Uniform Delay [s]	30.65	13.70	13.71	28.31	10.59	10.59	29.49	23.17	23.21	19.75	26.88	27.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.91	2.26	2.22	4.73	1.65	1.70	4.40	0.78	0.86	0.06	1.62	2.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

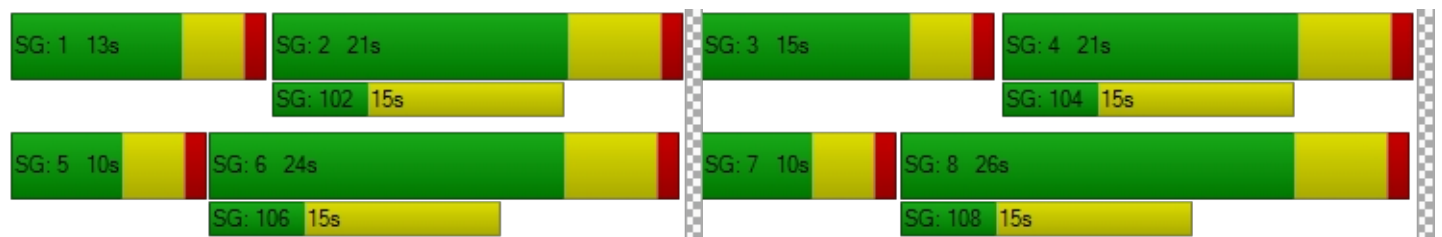
X, volume / capacity	0.51	0.49	0.49	0.76	0.44	0.44	0.69	0.44	0.44	0.05	0.53	0.57
d, Delay for Lane Group [s/veh]	33.57	15.96	15.92	33.04	12.24	12.29	33.89	23.96	24.07	19.80	28.50	29.22
Lane Group LOS	C	B	B	C	B	B	C	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.12	3.82	3.89	3.07	3.30	3.22	2.26	2.24	2.16	0.24	2.18	2.06
50th-Percentile Queue Length [ft]	28.02	95.38	97.26	76.66	82.62	80.61	56.62	56.08	53.96	6.06	54.45	51.39
95th-Percentile Queue Length [veh]	2.02	6.87	7.00	5.52	5.95	5.80	4.08	4.04	3.89	0.44	3.92	3.70
95th-Percentile Queue Length [ft]	50.43	171.68	175.06	137.98	148.72	145.10	101.92	100.95	97.13	10.90	98.02	92.50

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.57	15.94	15.92	33.04	12.26	12.29	33.89	24.00	24.07	19.80	28.57	29.22
Movement LOS	C	B	B	C	B	B	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	17.43			16.38			26.91			28.21		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.06											
Intersection LOS	C											
Intersection V/C	0.512											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐   ⇐			⇐   ⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	65	736	43	138	1073	14	18	7	32	23	12	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	121	3	0	38	0	0	0	1	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	14	0	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	829	0	0	904	0	0	1	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	1700	46	138	2033	14	18	8	33	24	12	74
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	447	12	36	535	4	5	2	9	6	3	19
Total Analysis Volume [veh/h]	71	1789	48	145	2140	15	19	8	35	25	13	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	18	29	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	39	39	8	42	42	7	7	7	7
g / C, Green / Cycle	0.09	0.66	0.66	0.13	0.70	0.70	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.04	0.38	0.38	0.09	0.44	0.44	0.02	0.03	0.02	0.06
s, saturation flow rate [veh/h]	1597	3192	1654	1597	3192	1671	1170	1525	1222	1456
c, Capacity [veh/h]	151	2096	1086	213	2220	1162	167	167	209	160
d1, Uniform Delay [s]	25.73	5.69	5.70	24.76	4.99	4.99	28.10	24.48	26.34	25.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.25	1.16	2.24	3.76	1.41	2.68	0.30	0.81	0.25	3.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

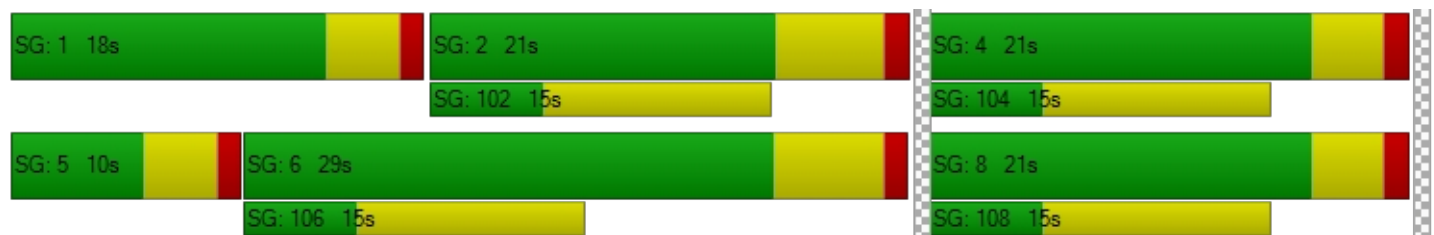
X, volume / capacity	0.47	0.58	0.58	0.68	0.64	0.64	0.11	0.26	0.12	0.57
d, Delay for Lane Group [s/veh]	27.98	6.86	7.94	28.53	6.40	7.67	28.40	25.28	26.59	28.55
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.97	2.64	3.07	1.99	2.62	3.15	0.26	0.55	0.32	1.26
50th-Percentile Queue Length [ft]	24.19	66.04	76.68	49.85	65.41	78.85	6.47	13.67	8.11	31.47
95th-Percentile Queue Length [veh]	1.74	4.75	5.52	3.59	4.71	5.68	0.47	0.98	0.58	2.27
95th-Percentile Queue Length [ft]	43.55	118.86	138.02	89.74	117.74	141.93	11.64	24.61	14.59	56.65

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.98	7.21	7.94	28.53	6.83	7.67	28.40	25.28	25.28	26.59	28.55	28.55
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	8.00			8.20			26.24			28.13		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.90											
Intersection LOS	A											
Intersection V/C	0.550											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	48.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.920

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	67	832	259	118	717	133	118	395	45	200	459	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	26	0	0	8	0	0	0	1	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	46	687	0	0	191	2	0	284	13	0	250	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	1564	259	118	939	135	118	679	59	200	709	83
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	412	68	31	247	36	31	179	16	53	187	22
Total Analysis Volume [veh/h]	121	1646	273	124	988	142	124	715	62	211	746	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	30	0	10	30	20	20	37	0	13	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	28	28	8	28	39	9	35	11	37	37
g / C, Green / Cycle	0.09	0.31	0.31	0.09	0.31	0.44	0.10	0.39	0.12	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.07	0.32	0.17	0.07	0.19	0.09	0.07	0.41	0.12	0.22	0.22
s, saturation flow rate [veh/h]	1774	5074	1583	1774	5074	1583	1774	1910	1774	1863	1868
c, Capacity [veh/h]	158	1579	493	158	1579	655	186	743	217	757	759
d1, Uniform Delay [s]	40.09	31.00	25.80	40.16	26.52	16.99	38.77	27.50	39.35	20.42	20.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.50	0.11	0.17	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.58	34.65	4.44	8.35	1.89	0.16	4.07	45.63	22.62	0.98	0.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.77	1.04	0.55	0.79	0.63	0.22	0.67	1.05	0.97	0.55	0.55
d, Delay for Lane Group [s/veh]	47.67	65.65	30.25	48.51	28.41	17.15	42.84	73.13	61.98	21.41	21.41
Lane Group LOS	D	F	C	D	C	B	D	F	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	2.86	15.67	5.19	2.96	5.95	1.80	2.75	23.93	5.82	6.36	6.38
50th-Percentile Queue Length [ft]	71.42	391.76	129.71	73.94	148.85	44.94	68.76	598.31	145.47	158.98	159.50
95th-Percentile Queue Length [veh]	5.14	22.75	8.92	5.32	9.96	3.24	4.95	32.99	9.77	10.49	10.52
95th-Percentile Queue Length [ft]	128.55	568.79	223.10	133.09	248.89	80.89	123.78	824.84	244.36	262.37	263.06

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	47.67	65.65	30.25	48.51	28.41	17.15	42.84	73.13	73.13	61.98	21.41	21.41
Movement LOS	D	F	C	D	C	B	D	E	E	E	C	C
d_A, Approach Delay [s/veh]	59.85			29.12			68.96			29.61		
Approach LOS	E			C			E			C		
d_I, Intersection Delay [s/veh]	48.03											
Intersection LOS	D											
Intersection V/C	0.920											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵↻			↵			↵↻		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	14	287	0	0	212	156	146	0	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	83	2	0	27	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	42	0	47	14	0	0	284	0	0	252	36
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	412	2	47	253	156	146	284	17	1	252	36
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	108	1	12	67	41	38	75	4	0	66	9
Total Analysis Volume [veh/h]	17	434	2	49	266	164	154	299	18	1	265	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	22	0	0	22	0	17	28	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	20	20	20	20	20	8	32	2	26	26
g / C, Green / Cycle	0.33	0.33	0.33	0.33	0.33	0.14	0.53	0.04	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.02	0.26	0.06	0.16	0.12	0.10	0.19	0.00	0.09	0.09
s, saturation flow rate [veh/h]	998	1675	854	1676	1425	1597	1660	1597	1676	1605
c, Capacity [veh/h]	311	558	190	559	475	226	872	65	713	683
d1, Uniform Delay [s]	19.98	18.02	26.81	15.85	15.07	24.48	8.34	27.61	10.90	10.93
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	2.42	0.71	0.63	0.43	3.61	1.17	0.09	0.69	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.05	0.78	0.26	0.48	0.35	0.68	0.36	0.02	0.21	0.22
d, Delay for Lane Group [s/veh]	20.05	20.45	27.52	16.48	15.50	28.10	9.52	27.70	11.59	11.67
Lane Group LOS	C	C	C	B	B	C	A	C	B	B
Critical Lane Group	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.18	4.96	0.66	2.56	1.50	2.10	2.06	0.01	1.19	1.17
50th-Percentile Queue Length [ft]	4.54	123.94	16.48	63.89	37.44	52.50	51.61	0.36	29.65	29.19
95th-Percentile Queue Length [veh]	0.33	8.61	1.19	4.60	2.70	3.78	3.72	0.03	2.13	2.10
95th-Percentile Queue Length [ft]	8.18	215.22	29.66	115.00	67.39	94.50	92.90	0.65	53.37	52.54

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	20.05	20.45	20.45	27.52	16.48	15.50	28.10	9.52	9.52	27.70	11.62	11.67
Movement LOS	C	C	C	C	B	B	C	A	A	C	B	B
d_A, Approach Delay [s/veh]	20.43			17.27			15.59			11.68		
Approach LOS	C			B			B			B		
d_I, Intersection Delay [s/veh]	16.65											
Intersection LOS	B											
Intersection V/C	0.452											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	26.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	460	78	254	632	0	0	0	0	146	0	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	127	8	0	39	0	0	0	1	3	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	14	0	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	93	808	89	119	731	140	85	245	86	99	328	82
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	1409	175	373	1420	140	85	245	87	248	328	184
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	371	46	98	374	37	22	64	23	65	86	48
Total Analysis Volume [veh/h]	100	1483	184	393	1495	147	89	258	92	261	345	194
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	3.6
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	22	0	12	24	0	10	21	0	15	26	12
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	7	28	28	10	32	32	6	11	11	13	17	29
g / C, Green / Cycle	0.10	0.41	0.41	0.14	0.45	0.45	0.09	0.15	0.15	0.19	0.25	0.42
(v / s)_i Volume / Saturation Flow Rate	0.03	0.35	0.35	0.13	0.34	0.34	0.06	0.08	0.06	0.16	0.11	0.14
s, saturation flow rate [veh/h]	3101	3192	1584	3101	3192	1601	1597	3192	1482	1597	3192	1425
c, Capacity [veh/h]	306	1294	642	443	1435	720	145	485	225	297	789	543
d1, Uniform Delay [s]	29.39	19.01	19.04	29.45	16.11	16.17	30.66	27.39	26.84	27.74	22.25	15.51
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.62	7.66	14.32	6.16	3.84	7.62	4.20	0.91	1.19	8.35	0.38	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

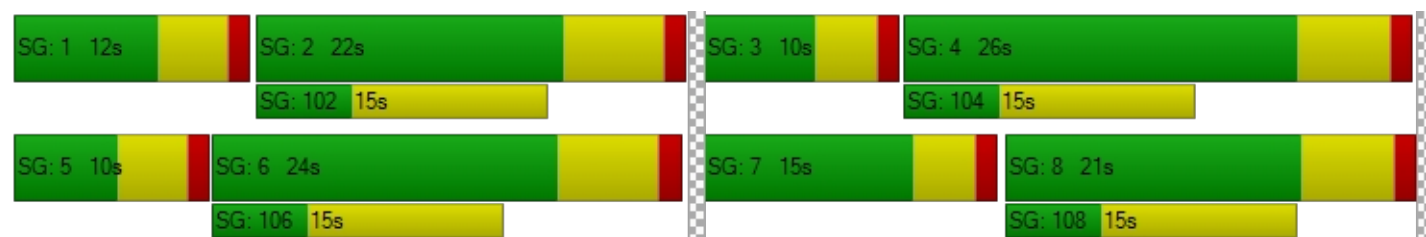
X, volume / capacity	0.33	0.86	0.86	0.89	0.76	0.77	0.62	0.53	0.41	0.88	0.44	0.36
d, Delay for Lane Group [s/veh]	30.00	26.67	33.36	35.61	19.96	23.80	34.86	28.30	28.03	36.09	22.63	15.90
Lane Group LOS	C	C	C	D	B	C	C	C	C	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.76	8.40	9.55	3.38	6.86	7.70	1.52	1.91	1.37	4.59	2.23	2.01
50th-Percentile Queue Length [ft]	18.99	209.97	238.67	84.46	171.47	192.55	38.03	47.72	34.14	114.65	55.74	50.34
95th-Percentile Queue Length [veh]	1.37	13.15	14.61	6.08	11.15	12.25	2.74	3.44	2.46	8.10	4.01	3.62
95th-Percentile Queue Length [ft]	34.18	328.79	365.35	152.02	278.85	306.33	68.46	85.89	61.45	202.45	100.33	90.62

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.00	28.34	33.36	35.61	21.00	23.80	34.86	28.30	28.03	36.09	22.63	15.90
Movement LOS	C	C	C	D	C	C	C	C	C	D	C	B
d_A, Approach Delay [s/veh]	28.95			24.02			29.57			25.39		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.45											
Intersection LOS	C											
Intersection V/C	0.721											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	85.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.148

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	0	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	45	1118	172	18	817	63	59	204	46	71	82	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	26	0	0	8	0	0	0	1	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	25	732	0	0	204	0	0	240	20	0	280	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	1895	172	18	1052	63	59	444	67	71	362	12
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	499	45	5	277	17	16	117	18	19	95	3
Total Analysis Volume [veh/h]	76	1995	181	19	1107	66	62	467	71	75	381	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	38	0	10	38	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	40	40	4	38	38	30	30	30	30
g / C, Green / Cycle	0.08	0.50	0.50	0.05	0.47	0.47	0.38	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.05	0.63	0.13	0.01	0.35	0.05	0.07	0.28	0.05	0.51
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	888	1676	1425	918
c, Capacity [veh/h]	126	1594	712	81	1503	671	93	629	534	396
d1, Uniform Delay [s]	35.62	20.02	11.48	36.49	17.15	11.74	39.99	21.66	16.44	26.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.26	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.53	118.56	0.86	1.47	3.26	0.29	7.85	4.18	0.11	105.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.60	1.25	0.25	0.24	0.74	0.10	0.66	0.74	0.13	1.18
d, Delay for Lane Group [s/veh]	40.15	138.59	12.34	37.96	20.40	12.04	47.84	25.84	16.56	132.13
Lane Group LOS	D	F	B	D	C	B	D	C	B	F
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.53	38.62	1.78	0.37	7.81	0.64	1.37	7.56	0.80	19.03
50th-Percentile Queue Length [ft]	38.16	965.45	44.52	9.37	195.23	15.92	34.36	189.01	20.12	475.68
95th-Percentile Queue Length [veh]	2.75	57.02	3.21	0.67	12.39	1.15	2.47	12.07	1.45	29.03
95th-Percentile Queue Length [ft]	68.68	1425.41	80.14	16.87	309.81	28.65	61.84	301.74	36.22	725.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	40.15	138.59	12.34	37.96	20.40	12.04	47.84	25.84	16.56	132.13	132.13	132.13
Movement LOS	D	F	B	D	C	B	D	C	B	F	F	F
d_A, Approach Delay [s/veh]	125.12			20.22			27.02			132.13		
Approach LOS	F			C			C			F		
d_I, Intersection Delay [s/veh]	85.10											
Intersection LOS	F											
Intersection V/C	1.148											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type:	All-way stop	Delay (sec / veh):	146.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.404

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	23	343	25	17	228	15	81	136	26	9	25	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	88	0	0	28	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	42	13	0	14	0	0	261	1	9	286	0
Total Hourly Volume [veh/h]	26	473	38	17	270	15	81	397	27	18	311	19
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	124	10	4	71	4	21	104	7	5	82	5
Total Analysis Volume [veh/h]	27	498	40	18	284	16	85	418	28	19	327	20
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	565	384	531	394
Degree of Utilization, x	1.40	0.83	1.32	0.93

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	27.92	7.56	24.42	10.06
95th-Percentile Queue Length [ft]	697.96	188.99	610.50	251.62
Approach Delay [s/veh]	220.89	44.44	188.40	59.66
Approach LOS	F	E	F	F
Intersection Delay [s/veh]	146.52			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	29.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.782

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌			⇌⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	220.00	100.00	970.00	200.00	100.00	100.00	30.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	2	657	43	82	860	4	10	7	6	44	3	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	137	7	0	43	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	14	0	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	122	860	47	37	766	63	45	118	99	56	150	39
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	1668	97	119	1687	67	55	125	105	102	153	94
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	439	26	31	444	18	14	33	28	27	40	25
Total Analysis Volume [veh/h]	131	1756	102	125	1776	71	58	132	111	107	161	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	55	0	13	54	0	21	30	0	12	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	12	68	68	11	67	67	6	13	13	10	17	17
g / C, Green / Cycle	0.11	0.62	0.62	0.10	0.61	0.61	0.06	0.12	0.12	0.09	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.08	0.38	0.39	0.08	0.55	0.56	0.04	0.04	0.07	0.07	0.10	0.07
s, saturation flow rate [veh/h]	1597	3192	1630	1597	1676	1654	1597	3192	1482	1597	1676	1425
c, Capacity [veh/h]	174	1967	1004	160	1018	1004	95	384	178	145	254	216
d1, Uniform Delay [s]	47.56	13.18	13.21	48.33	18.92	19.24	50.48	44.40	46.01	48.72	43.79	42.54
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.41	1.51	2.96	8.11	13.18	14.64	6.19	0.53	3.53	7.09	2.60	1.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	0.62	0.63	0.78	0.91	0.92	0.61	0.34	0.62	0.74	0.63	0.46
d, Delay for Lane Group [s/veh]	53.96	14.69	16.17	56.44	32.10	33.87	56.67	44.93	49.54	55.81	46.39	44.05
Lane Group LOS	D	B	B	E	C	C	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	3.72	8.77	9.41	3.64	21.51	22.17	1.69	1.65	3.00	3.09	4.20	2.49
50th-Percentile Queue Length [ft]	92.96	219.30	235.35	90.91	537.81	554.22	42.34	41.26	75.05	77.22	105.12	62.32
95th-Percentile Queue Length [veh]	6.69	13.63	14.45	6.55	29.12	29.89	3.05	2.97	5.40	5.56	7.57	4.49
95th-Percentile Queue Length [ft]	167.33	340.73	361.14	163.64	727.98	747.26	76.22	74.27	135.09	139.00	189.19	112.17

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	53.96	15.13	16.17	56.44	32.95	33.87	56.67	44.93	49.54	55.81	46.39	44.05
Movement LOS	D	B	B	E	C	C	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	17.74			34.47			48.89			48.50		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	29.33											
Intersection LOS	C											
Intersection V/C	0.782											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	185.00	100.00	50.00	165.00	100.00	165.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	84	1062	18	11	837	88	284	220	142	16	37	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	27	0	0	8	0	0	0	1	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	34	757	0	0	224	0	0	18	25	0	14	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	1865	18	11	1092	88	284	238	168	16	51	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	491	5	3	287	23	75	63	44	4	13	2
Total Analysis Volume [veh/h]	126	1963	19	12	1149	93	299	251	177	17	54	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	35	46	0	10	21	0	43	48	0	16	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	74	74	4	65	65	26	30	30	4	8
g / C, Green / Cycle	0.10	0.62	0.62	0.03	0.55	0.55	0.21	0.25	0.25	0.04	0.07
(v / s)_i Volume / Saturation Flow Rate	0.08	0.61	0.01	0.01	0.36	0.07	0.19	0.15	0.12	0.01	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1482	1597	1647
c, Capacity [veh/h]	167	1970	880	52	1739	776	340	414	366	59	116
d1, Uniform Delay [s]	52.21	22.83	8.91	56.61	19.42	13.30	45.70	40.04	38.66	56.24	53.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.15	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.69	19.42	0.05	2.27	1.99	0.32	9.59	1.44	0.99	2.64	3.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

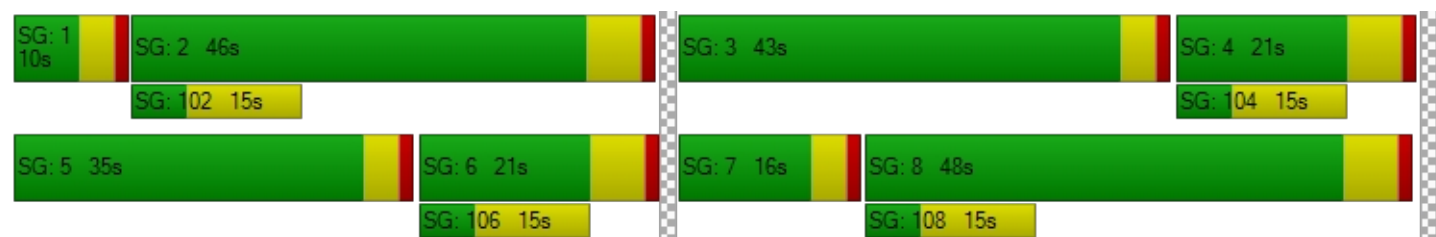
X, volume / capacity	0.75	1.00	0.02	0.23	0.66	0.12	0.88	0.61	0.48	0.29	0.52
d, Delay for Lane Group [s/veh]	58.90	42.25	8.95	58.87	21.41	13.61	55.28	41.48	39.65	58.88	57.32
Lane Group LOS	E	D	A	E	C	B	E	D	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.94	29.29	0.19	0.38	11.08	1.24	9.33	6.59	4.48	0.54	1.84
50th-Percentile Queue Length [ft]	98.46	732.13	4.80	9.55	277.00	31.07	233.20	164.82	111.94	13.44	45.89
95th-Percentile Queue Length [veh]	7.09	38.16	0.35	0.69	16.54	2.24	14.34	10.80	7.95	0.97	3.30
95th-Percentile Queue Length [ft]	177.23	954.01	8.64	17.20	413.47	55.93	358.43	270.09	198.69	24.20	82.61

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	58.90	42.25	8.95	58.87	21.41	13.61	55.28	41.48	39.65	58.88	57.32	57.32
Movement LOS	E	D	A	E	C	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	42.95			21.19			46.71			57.67		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	37.33											
Intersection LOS	D											
Intersection V/C	0.846											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	All-way stop	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	17	241	9	20	200	34	105	64	44	9	18	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	90	0	0	29	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	54	0	0	23	1	0	16	2	0	12	1
Total Hourly Volume [veh/h]	19	385	9	20	252	35	105	80	46	9	30	21
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	101	2	5	66	9	28	21	12	2	8	6
Total Analysis Volume [veh/h]	20	405	9	21	265	37	111	84	48	9	32	22
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	622	607	557	525
Degree of Utilization, x	0.70	0.53	0.44	0.12

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	5.60	3.13	2.20	0.41
95th-Percentile Queue Length [ft]	140.09	78.28	55.08	10.17
Approach Delay [s/veh]	21.09	15.46	14.40	10.80
Approach LOS	C	C	B	B
Intersection Delay [s/veh]	17.24			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	67.3
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.090

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration	⇐⇐⇐			⇑⇑⇑			⇐⇑⇑⇑					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	706	4	474	0	1366	521	225	1191	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	52	0	0	0	11	0	0	35	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	6	0	0	0	11	0	0	8	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	395	0	0	286	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	764	4	474	0	1783	521	225	1520	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	201	1	125	0	469	137	59	400	0	0	0	0
Total Analysis Volume [veh/h]	804	4	499	0	1877	548	237	1600	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	40	0	0	59	0	11	70	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	38	38	38	57	57	9	68
g / C, Green / Cycle	0.35	0.35	0.35	0.52	0.52	0.08	0.62
(v / s)_i Volume / Saturation Flow Rate	0.29	0.29	0.39	0.57	0.61	0.09	0.40
s, saturation flow rate [veh/h]	1416	1417	1264	2831	1328	2750	4050
c, Capacity [veh/h]	489	489	437	1467	688	225	2504
d1, Uniform Delay [s]	32.97	32.96	36.00	26.50	26.50	50.50	13.25
k, delay calibration	0.39	0.39	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.77	11.74	88.30	56.63	93.37	43.02	1.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

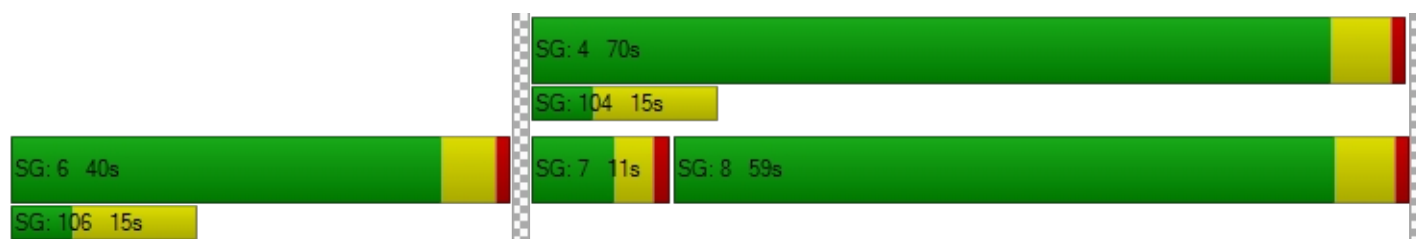
X, volume / capacity	0.83	0.83	1.14	1.10	1.17	1.05	0.64
d, Delay for Lane Group [s/veh]	44.74	44.70	124.30	83.13	119.87	93.52	14.52
Lane Group LOS	D	D	F	F	F	F	B
Critical Lane Group	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	11.02	11.01	21.82	28.87	34.11	4.37	7.64
50th-Percentile Queue Length [ft]	275.46	275.31	545.60	721.79	852.75	109.33	190.88
95th-Percentile Queue Length [veh]	16.46	16.45	32.07	40.58	49.16	7.87	12.17
95th-Percentile Queue Length [ft]	411.56	411.37	801.65	1014.52	1228.89	196.79	304.17

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.72	44.70	124.30	0.00	88.23	119.87	93.52	14.52	0.00	0.00	0.00	0.00
Movement LOS	D	D	F		F	F	F	B				
d_A, Approach Delay [s/veh]	75.10			95.38			24.71			0.00		
Approach LOS	E			F			C			A		
d_I, Intersection Delay [s/veh]	67.31											
Intersection LOS	E											
Intersection V/C	1.090											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	111.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.121

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Base Volume Input [veh/h]	372	108	189	83	0	423	295	1490	298	0	1372	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	64	0	0	203	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	395	0	0	286	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	372	108	189	83	0	423	295	1967	298	0	1875	36
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	98	28	50	22	0	111	78	518	78	0	493	9
Total Analysis Volume [veh/h]	392	114	199	87	0	445	311	2071	314	0	1974	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	37	0	24	24	62	0	0	38	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No			No	No			No	
Maximum Recall		No		No			No	No			No	
Pedestrian Recall		No		No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	35	35	22	60	36	36
g / C, Green / Cycle	0.16	0.16	0.16	0.29	0.29	0.18	0.50	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.16	0.06	0.35	0.22	0.51	0.37	0.34
s, saturation flow rate [veh/h]	1416	1447	1264	1416	1264	1416	4050	4050	1467
c, Capacity [veh/h]	224	229	200	413	369	260	2025	1215	440
d1, Uniform Delay [s]	50.50	50.50	50.45	32.07	42.50	49.00	30.00	42.00	42.00
k, delay calibration	0.24	0.23	0.18	0.11	0.50	0.36	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	77.92	75.66	36.71	0.25	116.06	112.97	25.94	115.96	88.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

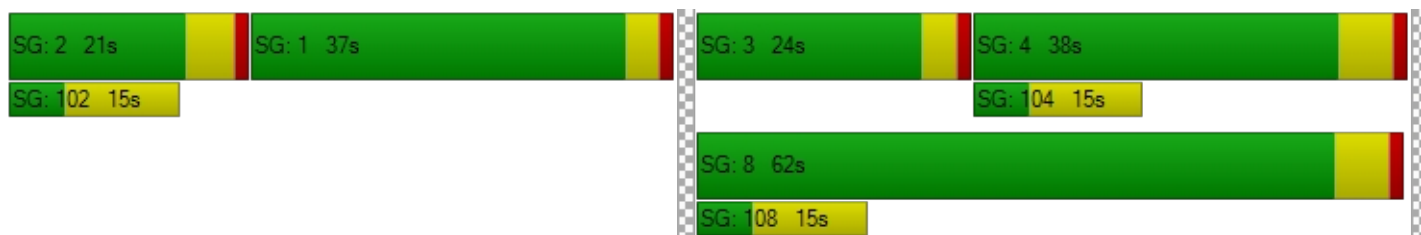
X, volume / capacity	1.12	1.11	0.99	0.21	1.21	1.20	1.02	1.24	1.14
d, Delay for Lane Group [s/veh]	128.42	126.16	87.16	32.33	158.56	161.97	55.94	157.96	130.05
Lane Group LOS	F	F	F	C	F	F	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	11.44	11.54	7.88	1.91	22.44	15.74	22.86	24.62	23.34
50th-Percentile Queue Length [ft]	285.95	288.58	196.97	47.70	560.90	393.51	571.50	615.44	583.56
95th-Percentile Queue Length [veh]	17.87	17.98	12.48	3.43	33.63	24.23	31.24	37.04	33.90
95th-Percentile Queue Length [ft]	446.81	449.49	312.06	85.86	840.70	605.82	781.10	926.04	847.41

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	127.61	126.16	87.16	32.33	0.00	158.56	161.97	55.94	0.00	0.00	151.39	130.05
Movement LOS	F	F	F	C		F	F	F			F	F
d_A, Approach Delay [s/veh]	115.95			137.92			69.78			150.99		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	111.01											
Intersection LOS	F											
Intersection V/C	1.121											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.806

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	61	472	57	38	437	122	87	905	106	53	742	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	1	0	0	0	64	0	2	203	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	395	0	0	286	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	472	58	39	437	122	87	1382	106	55	1245	50
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	124	15	10	115	32	23	364	28	14	328	13
Total Analysis Volume [veh/h]	64	497	61	41	460	128	92	1455	112	58	1311	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	27	0	10	27	0	12	63	10	10	61	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	27	27	6	26	26	10	62	72	7	59	59
g / C, Green / Cycle	0.07	0.25	0.25	0.05	0.23	0.23	0.09	0.57	0.65	0.06	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.05	0.18	0.05	0.03	0.20	0.21	0.06	0.51	0.05	0.04	0.46	0.46
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1377	1416	2831	2237	1416	1487	1467
c, Capacity [veh/h]	93	696	311	75	346	321	125	1606	1412	87	803	792
d1, Uniform Delay [s]	50.26	37.94	32.87	50.78	40.67	40.76	48.91	21.20	7.87	50.55	21.58	21.64
k, delay calibration	0.11	0.11	0.11	0.11	0.27	0.27	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.55	1.38	0.31	6.02	15.46	17.55	8.16	8.94	0.02	8.60	11.18	11.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.69	0.71	0.20	0.55	0.88	0.89	0.74	0.91	0.08	0.67	0.85	0.86
d, Delay for Lane Group [s/veh]	58.81	39.32	33.17	56.81	56.12	58.32	57.07	30.14	7.90	59.14	32.76	33.12
Lane Group LOS	E	D	C	E	E	E	E	C	A	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.91	6.07	1.29	1.21	9.16	8.75	2.70	16.80	0.47	1.74	16.14	16.06
50th-Percentile Queue Length [ft]	47.78	151.65	32.20	30.17	228.94	218.83	67.40	420.12	11.82	43.50	403.53	401.56
95th-Percentile Queue Length [veh]	3.44	10.11	2.32	2.17	14.12	13.61	4.85	23.53	0.85	3.13	22.73	22.63
95th-Percentile Queue Length [ft]	86.01	252.63	57.96	54.31	353.02	340.14	121.32	588.19	21.27	78.31	568.26	565.87

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	58.81	39.32	33.17	56.81	56.87	58.32	57.07	30.14	7.90	59.14	32.93	33.12
Movement LOS	E	D	C	E	E	E	E	C	A	E	C	C
d_A, Approach Delay [s/veh]	40.72			57.16			30.13			34.01		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	36.85											
Intersection LOS	D											
Intersection V/C	0.806											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	61.1
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.924

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	70	844	366	81	708	152	242	680	103	241	454	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	1	0	0	0	67	0	3	211	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	395	0	0	286	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	844	367	82	708	152	242	1160	103	244	965	73
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	222	97	22	186	40	64	305	27	64	254	19
Total Analysis Volume [veh/h]	74	888	386	86	745	160	255	1221	108	257	1016	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	37	0	10	37	0	22	50	0	13	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	35	35	8	35	35	20	48	48	11	39	39
g / C, Green / Cycle	0.07	0.32	0.32	0.07	0.32	0.32	0.18	0.44	0.44	0.10	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.05	0.31	0.31	0.06	0.26	0.13	0.18	0.45	0.46	0.09	0.36	0.06
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1445	2750	2831	1264
c, Capacity [veh/h]	103	901	402	103	901	402	257	649	631	275	1004	448
d1, Uniform Delay [s]	49.90	37.25	36.81	50.35	34.70	29.27	44.90	31.00	31.00	49.14	35.50	24.40
k, delay calibration	0.11	0.12	0.50	0.11	0.11	0.11	0.20	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.00	11.93	35.85	15.76	2.01	0.64	33.31	44.10	48.01	13.75	31.45	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

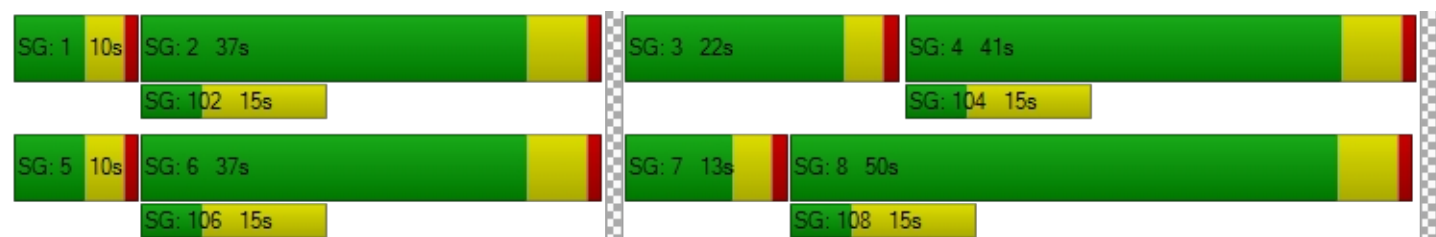
X, volume / capacity	0.72	0.99	0.96	0.84	0.83	0.40	0.99	1.03	1.04	0.93	1.01	0.17
d, Delay for Lane Group [s/veh]	58.90	49.18	72.66	66.11	36.71	29.91	78.22	75.10	79.01	62.90	66.95	25.23
Lane Group LOS	E	D	E	E	D	C	E	F	F	E	F	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	2.21	12.81	13.73	2.74	9.10	3.28	9.12	23.93	23.94	3.95	17.12	1.45
50th-Percentile Queue Length [ft]	55.23	320.26	343.18	68.49	227.41	81.91	227.99	598.29	598.61	98.76	428.12	36.17
95th-Percentile Queue Length [veh]	3.98	18.68	19.80	4.93	14.04	5.90	14.07	32.74	33.02	7.11	24.11	2.60
95th-Percentile Queue Length [ft]	99.41	467.01	495.09	123.28	351.06	147.43	351.81	818.51	825.49	177.76	602.73	65.11

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	58.90	49.18	72.66	66.11	36.71	29.91	78.22	76.86	79.01	62.90	66.95	25.23
Movement LOS	E	D	E	E	D	C	E	E	E	E	F	C
d_A, Approach Delay [s/veh]	56.44			38.16			77.23			63.80		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	61.13											
Intersection LOS	E											
Intersection V/C	0.924											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	180.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	28	74	30	85	97	108	137	901	37	24	386	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	1	0	0	0	70	0	3	221	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	395	0	0	286	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	74	31	86	97	108	137	1384	37	27	907	52
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	19	8	23	26	28	36	364	10	7	239	14
Total Analysis Volume [veh/h]	29	78	33	91	102	114	144	1457	39	28	955	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	18	29	0	10	21	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	9	9	7	11	11	10	42	42	4	37	37
g / C, Green / Cycle	0.06	0.12	0.12	0.10	0.16	0.16	0.14	0.60	0.60	0.06	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.03	0.06	0.07	0.09	0.10	0.35	0.35	0.02	0.34	0.04
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1467	1416	2831	1264
c, Capacity [veh/h]	89	185	157	137	235	200	198	1708	885	88	1487	664
d1, Uniform Delay [s]	31.40	28.33	27.56	30.53	26.63	27.26	28.84	8.46	8.46	31.43	11.90	8.24
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	1.53	0.66	5.46	1.26	2.55	5.07	1.43	2.74	2.07	2.14	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.33	0.42	0.21	0.67	0.43	0.57	0.73	0.58	0.58	0.32	0.64	0.08
d, Delay for Lane Group [s/veh]	33.51	29.86	28.22	35.99	27.89	29.81	33.92	9.88	11.19	33.50	14.04	8.49
Lane Group LOS	C	C	C	D	C	C	C	A	B	C	B	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.49	1.21	0.49	1.59	1.51	1.78	2.42	3.63	4.09	0.48	4.68	0.38
50th-Percentile Queue Length [ft]	12.33	30.15	12.32	39.80	37.76	44.39	60.62	90.86	102.24	11.91	116.99	9.58
95th-Percentile Queue Length [veh]	0.89	2.17	0.89	2.87	2.72	3.20	4.36	6.54	7.36	0.86	8.23	0.69
95th-Percentile Queue Length [ft]	22.19	54.27	22.18	71.63	67.97	79.90	109.12	163.54	184.04	21.43	205.68	17.25

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.51	29.86	28.22	35.99	27.89	29.81	33.92	10.31	11.19	33.50	14.04	8.49
Movement LOS	C	C	C	D	C	C	C	B	B	C	B	A
d_A, Approach Delay [s/veh]	30.23			31.01			12.40			14.27		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.65											
Intersection LOS	B											
Intersection V/C	0.556											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	42.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.931

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	99	902	55	61	865	111	216	371	159	34	172	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	138	23	0	2	7	0	0	29	44	0	93	5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	14	19	0	0	23	0	0	0	18	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	81	790	4	3	247	0	0	378	40	3	262	2
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	332	1734	59	66	1142	111	216	778	261	37	527	43
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	456	16	17	301	29	57	205	69	10	139	11
Total Analysis Volume [veh/h]	349	1825	62	69	1202	117	227	819	275	39	555	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	12	31	0	10	29	0	0	39	0	0	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	31	31	6	27	27	37	37	37	37	37	37
g / C, Green / Cycle	0.13	0.39	0.39	0.08	0.34	0.34	0.46	0.46	0.46	0.46	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.11	0.40	0.04	0.04	0.26	0.08	0.31	0.49	0.19	0.07	0.18	0.18
s, saturation flow rate [veh/h]	3101	4567	1425	1597	4567	1425	734	1676	1425	598	1676	1633
c, Capacity [veh/h]	388	1756	548	125	1541	481	333	775	659	90	775	755
d1, Uniform Delay [s]	34.51	24.62	15.84	35.54	23.83	19.13	25.91	21.50	14.32	40.00	14.11	14.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.27	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.74	32.46	0.42	3.81	3.98	1.20	5.94	48.21	0.42	3.26	0.32	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

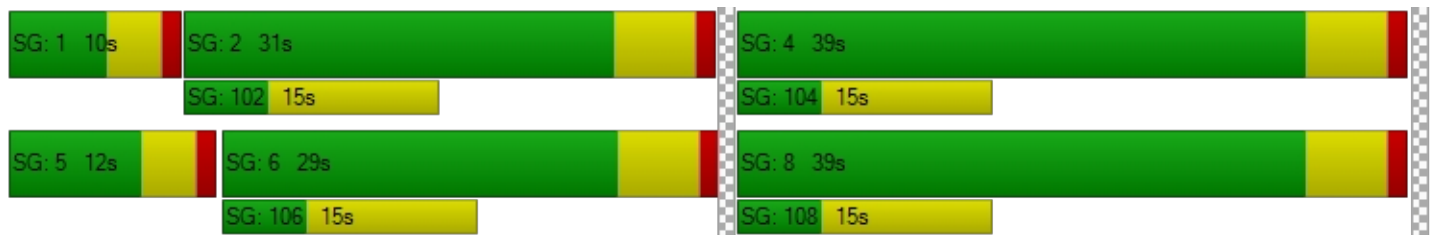
X, volume / capacity	0.90	1.04	0.11	0.55	0.78	0.24	0.68	1.06	0.42	0.43	0.39	0.39
d, Delay for Lane Group [s/veh]	42.25	57.07	16.26	39.35	27.81	20.33	31.85	69.71	14.74	43.26	14.43	14.45
Lane Group LOS	D	F	B	D	C	C	C	F	B	D	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	3.58	15.09	0.73	1.37	6.76	1.61	4.34	22.80	3.01	0.82	3.26	3.19
50th-Percentile Queue Length [ft]	89.59	377.37	18.32	34.25	168.96	40.28	108.45	569.98	75.25	20.45	81.48	79.70
95th-Percentile Queue Length [veh]	6.45	22.03	1.32	2.47	11.02	2.90	7.75	31.90	5.42	1.47	5.87	5.74
95th-Percentile Queue Length [ft]	161.27	550.73	32.98	61.64	275.55	72.51	193.84	797.53	135.45	36.81	146.66	143.45

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	42.25	57.07	16.26	39.35	27.81	20.33	31.85	69.71	14.74	43.26	14.44	14.45
Movement LOS	D	F	B	D	C	C	C	F	B	D	B	B
d_A, Approach Delay [s/veh]	53.63			27.75			51.76			16.20		
Approach LOS	D			C			D			B		
d_I, Intersection Delay [s/veh]	42.47											
Intersection LOS	D											
Intersection V/C	0.931											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	All-way stop	Delay (sec / veh):	401.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.521

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	12	177	52	61	173	33	48	401	17	28	189	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	98	90	0	0	29	0	0	0	31	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	53	16	3	22	0	0	427	0	14	298	2
Total Hourly Volume [veh/h]	110	320	68	64	224	33	48	828	48	42	487	19
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	84	18	17	59	9	13	218	13	11	128	5
Total Analysis Volume [veh/h]	116	337	72	67	236	35	51	872	51	44	513	20
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	525	376	974	577
Degree of Utilization, x	1.36	0.90	2.52	1.50

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	25.10	9.13	78.14	30.92
95th-Percentile Queue Length [ft]	627.38	228.35	1953.45	772.92
Approach Delay [s/veh]	202.61	56.12	712.07	260.89
Approach LOS	F	F	F	F
Intersection Delay [s/veh]	401.58			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	153.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.220

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	500.00	100.00	280.00	320.00	100.00	75.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	40.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	43	544	164	36	812	52	97	314	115	256	145	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	144	117	0	45	0	0	0	0	37	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	7	6	0	11	0	0	0	0	8	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	293	1312	382	16	1160	117	96	358	310	335	271	12
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	336	2007	669	52	2028	169	193	672	425	636	416	47
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	528	176	14	534	44	51	177	112	167	109	12
Total Analysis Volume [veh/h]	354	2113	704	55	2135	178	203	707	447	669	438	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	13	64	22	11	62	0	11	23	13	22	34	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	11	64	7	60	60	9	21	20	32	32
g / C, Green / Cycle	0.09	0.53	0.06	0.50	0.50	0.08	0.18	0.17	0.27	0.27
(v / s)_j Volume / Saturation Flow Rate	0.11	0.66	0.03	0.67	0.12	0.07	0.22	0.22	0.26	0.03
s, saturation flow rate [veh/h]	3101	3192	1597	3192	1425	3101	3192	3101	1676	1425
c, Capacity [veh/h]	284	1703	93	1596	713	233	559	517	447	380
d1, Uniform Delay [s]	54.50	27.98	55.14	30.00	17.14	54.93	49.50	50.00	43.68	33.42
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.48	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	117.02	113.38	5.95	156.32	0.84	9.81	122.78	135.78	37.15	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

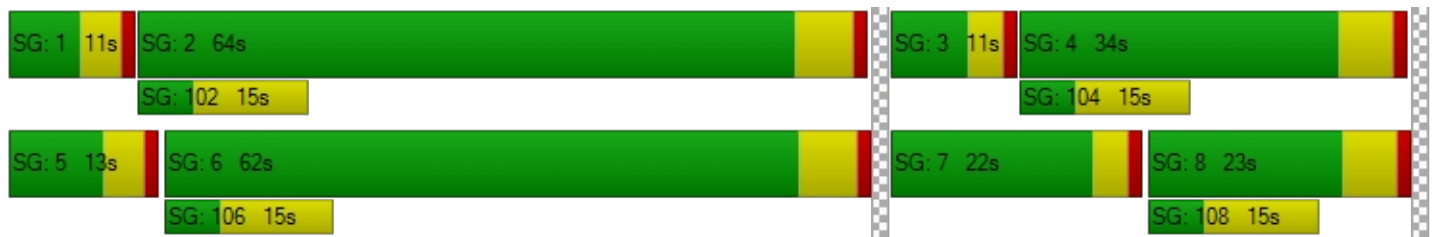
X, volume / capacity	1.25	1.24	0.59	1.34	0.25	0.87	1.27	1.29	0.98	0.13
d, Delay for Lane Group [s/veh]	171.52	141.36	61.09	186.32	17.98	64.74	172.28	185.78	80.83	33.57
Lane Group LOS	F	F	E	F	B	E	F	F	F	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	8.83	49.09	1.74	55.56	2.83	3.28	17.63	17.25	16.99	1.08
50th-Percentile Queue Length [ft]	220.86	1227.23	43.49	1389.01	70.78	81.96	440.72	431.33	424.82	26.89
95th-Percentile Queue Length [veh]	14.76	70.87	3.13	82.45	5.10	5.90	27.28	26.94	23.75	1.94
95th-Percentile Queue Length [ft]	369.03	1771.84	78.28	2061.24	127.40	147.53	681.91	673.45	593.83	48.40

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	171.52	141.36	0.00	61.09	186.32	17.98	64.74	172.28	0.00	185.78	80.83	33.57
Movement LOS	F	F		E	F	B	E	F		F	F	C
d_A, Approach Delay [s/veh]	145.69			170.75			148.29			139.56		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	153.61											
Intersection LOS	F											
Intersection V/C	1.220											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	175.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.262

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	240.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	70	241	141	281	374	39	28	355	179	296	295	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	117	0	0	37	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	12	0	0	17	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	36	450	427	175	395	208	109	1493	85	269	1834	196
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	691	568	456	769	247	137	1977	264	565	2183	267
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	182	149	120	202	65	36	520	69	149	574	70
Total Analysis Volume [veh/h]	112	727	598	480	809	260	144	2081	278	595	2298	281
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups			2,7									1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	27	19	16	33	0	11	58	0	19	66	16
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No		No	No		No	No	No
Maximum Recall	No	No	No	No	No		No	No		No	No	No
Pedestrian Recall	No	No	No	No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	8	25	44	14	31	31	9	56	56	17	64	80
g / C, Green / Cycle	0.07	0.21	0.37	0.12	0.26	0.26	0.08	0.47	0.47	0.14	0.53	0.67
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.42	0.15	0.33	0.34	0.09	0.65	0.20	0.19	0.72	0.20
s, saturation flow rate [veh/h]	1597	3192	1425	3101	1676	1540	1597	3192	1425	3101	3192	1425
c, Capacity [veh/h]	106	665	496	362	433	398	120	1490	665	439	1702	924
d1, Uniform Delay [s]	56.00	47.50	39.10	53.00	44.50	44.50	55.50	32.00	21.20	51.50	28.00	9.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.28	0.11	0.11	0.26	0.30
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	54.97	63.07	110.00	151.35	138.04	154.74	107.49	181.02	0.42	162.86	159.53	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.05	1.09	1.20	1.33	1.27	1.31	1.20	1.40	0.42	1.35	1.35	0.30
d, Delay for Lane Group [s/veh]	110.97	110.57	149.10	204.35	182.54	199.24	162.99	213.02	21.62	214.36	187.53	9.75
Lane Group LOS	F	F	F	F	F	F	F	F	C	F	F	A
Critical Lane Group	Yes	No	Yes	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	4.79	15.51	29.17	12.95	29.09	28.58	7.13	57.62	5.06	16.40	60.01	3.06
50th-Percentile Queue Length [ft]	119.82	387.66	729.27	323.74	727.35	714.48	178.37	1440.44	126.62	410.07	1500.16	76.60
95th-Percentile Queue Length [veh]	8.51	23.03	42.78	20.92	43.17	43.00	12.20	86.65	8.76	26.00	89.29	5.51
95th-Percentile Queue Length [ft]	212.86	575.67	1069.60	522.95	1079.15	1074.92	304.96	2166.36	218.89	649.96	2232.30	137.87

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	110.97	110.57	149.10	204.35	187.90	199.24	162.99	213.02	21.62	214.36	187.53	9.75
Movement LOS	F	F	F	F	F	F	F	F	C	F	F	A
d_A, Approach Delay [s/veh]	126.64			194.90			188.89			176.82		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	175.22											
Intersection LOS	F											
Intersection V/C	1.262											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	79.8
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.098

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵↵		↑↑↑		↑↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	318	500	0	495	198	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	34	0	117	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	15	0	12	2	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	1060	0	1559	809	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	1609	0	2183	1012	0
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	423	0	574	266	0
Total Analysis Volume [veh/h]	335	1694	0	2298	1065	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	43	0	0	37	37	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	41	41	41	35	35
g / C, Green / Cycle	0.51	0.51	0.51	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.21	0.59	0.59	0.50	0.33
s, saturation flow rate [veh/h]	1597	1425	1425	4567	3192
c, Capacity [veh/h]	818	730	730	1998	1397
d1, Uniform Delay [s]	12.03	19.50	19.50	22.50	18.99
k, delay calibration	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	86.73	86.73	73.90	3.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.41	1.16	1.16	1.15	0.76
d, Delay for Lane Group [s/veh]	12.36	106.23	106.23	96.40	22.99
Lane Group LOS	B	F	F	F	C
Critical Lane Group	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	3.44	29.50	29.50	25.05	8.46
50th-Percentile Queue Length [ft]	86.12	737.58	737.58	626.37	211.46
95th-Percentile Queue Length [veh]	6.20	42.78	42.78	36.61	13.23
95th-Percentile Queue Length [ft]	155.02	1069.60	1069.60	915.18	330.70

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	12.36	106.23	0.00	96.40	22.99	0.00
Movement LOS	B	F		F	C	
d_A, Approach Delay [s/veh]	90.73		96.40		22.99	
Approach LOS	F		F		C	
d_I, Intersection Delay [s/veh]	79.76					
Intersection LOS	E					
Intersection V/C	1.098					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	93.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.380

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	95	81	468	380	241	272
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	9	108	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	2	10	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	567	0	217	1293	0	252
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	662	81	696	1791	241	529
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	174	21	183	471	63	139
Total Analysis Volume [veh/h]	697	85	733	1885	254	557
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	3.0	0.0	4.8	3.0	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	38	0	62	38	0	62
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	36	36	36	60	98	60	60
g / C, Green / Cycle	0.36	0.36	0.36	0.60	0.98	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.06	0.16	1.32	0.20	0.12
s, saturation flow rate [veh/h]	1597	1597	1425	4567	1425	1259	4567
c, Capacity [veh/h]	575	575	513	2740	1342	720	2740
d1, Uniform Delay [s]	26.20	26.20	21.78	9.53	2.90	14.76	9.11
k, delay calibration	0.19	0.19	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.83	1.83	0.15	0.24	186.46	1.36	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

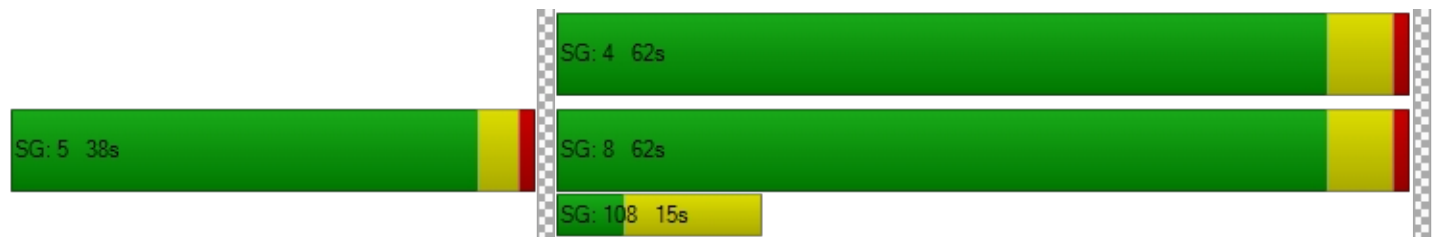
X, volume / capacity	0.61	0.61	0.17	0.27	1.40	0.35	0.20
d, Delay for Lane Group [s/veh]	28.03	28.03	21.93	9.77	189.36	16.12	9.28
Lane Group LOS	C	C	C	A	F	B	A
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	6.93	6.93	1.37	2.46	69.53	1.82	1.78
50th-Percentile Queue Length [ft]	173.28	173.28	34.19	61.38	1738.14	45.55	44.55
95th-Percentile Queue Length [veh]	11.25	11.25	2.46	4.42	109.07	3.28	3.21
95th-Percentile Queue Length [ft]	281.23	281.23	61.55	110.49	2726.84	81.99	80.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.03	21.93	9.77	189.36	16.12	9.28
Movement LOS	C	C	A	F	B	A
d_A, Approach Delay [s/veh]	27.36		139.08		11.42	
Approach LOS	C		F		B	
d_I, Intersection Delay [s/veh]	93.75					
Intersection LOS	F					
Intersection V/C	0.380					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	75.00	140.00	100.00	70.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	98	980	8	15	1018	49	46	42	185	0	6	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	41	0	40	10	0	0	1	0	0	2	120
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	33	0	0	41	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	52	840	0	54	236	0	0	8	48	0	5	34
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	1894	8	109	1305	49	46	51	233	0	13	162
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	498	2	29	343	13	12	13	61	0	3	43
Total Analysis Volume [veh/h]	158	1994	8	115	1374	52	48	54	245	0	14	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	16	26	0	53	63	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	65	65	10	62	62	19	19	19	19	19
g / C, Green / Cycle	0.13	0.65	0.65	0.10	0.62	0.62	0.19	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.10	0.62	0.01	0.07	0.43	0.04	0.04	0.03	0.17	0.00	0.13
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1074	1676	1482	1210	1441
c, Capacity [veh/h]	203	2066	922	164	1989	888	137	319	282	257	274
d1, Uniform Delay [s]	42.29	16.58	6.26	43.38	12.48	7.38	46.16	33.90	39.30	0.00	37.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.12	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.36	13.13	0.02	5.35	1.99	0.13	1.51	0.25	8.98	0.00	2.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

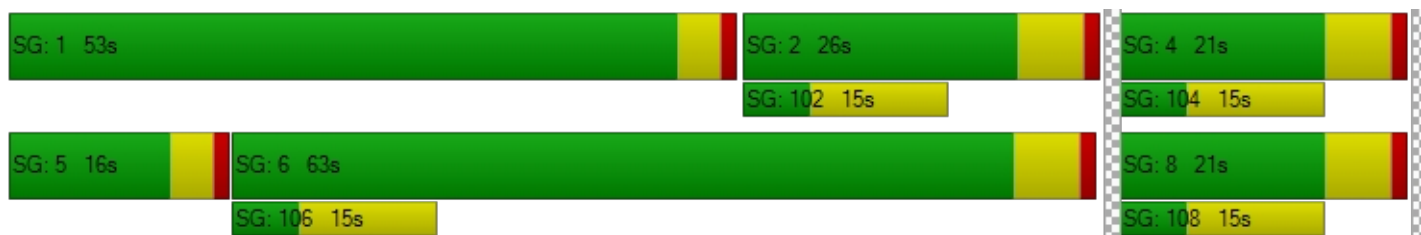
X, volume / capacity	0.78	0.97	0.01	0.70	0.69	0.06	0.35	0.17	0.87	0.00	0.68
d, Delay for Lane Group [s/veh]	48.65	29.70	6.27	48.73	14.47	7.50	47.67	34.15	48.29	0.00	40.53
Lane Group LOS	D	C	A	D	B	A	D	C	D	A	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	4.10	22.06	0.06	2.92	9.16	0.42	1.20	1.09	6.33	0.00	4.29
50th-Percentile Queue Length [ft]	102.62	551.48	1.49	73.06	228.90	10.40	30.02	27.28	158.18	0.00	107.19
95th-Percentile Queue Length [veh]	7.39	29.76	0.11	5.26	14.12	0.75	2.16	1.96	10.45	0.00	7.68
95th-Percentile Queue Length [ft]	184.72	744.05	2.69	131.50	352.96	18.72	54.03	49.11	261.32	0.00	192.09

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	48.65	29.70	6.27	48.73	14.47	7.50	47.67	34.15	48.29	0.00	40.53	40.53
Movement LOS	D	C	A	D	B	A	D	C	D	A	D	D
d_A, Approach Delay [s/veh]	31.00			16.79			46.00			40.53		
Approach LOS	C			B			D			D		
d_I, Intersection Delay [s/veh]	27.48											
Intersection LOS	C											
Intersection V/C	0.862											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	82.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.172

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	2	208	0	3	197	8	27	0	21	1	3	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	33	0	52	9	0	0	40	1	0	119	155
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	100	30	0	50	0	0	62	0	30	39	0
Total Hourly Volume [veh/h]	5	341	30	55	256	8	27	102	22	31	161	160
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	90	8	14	67	2	7	27	6	8	42	42
Total Analysis Volume [veh/h]	5	359	32	58	269	8	28	107	23	33	169	168
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.29	0.35	0.03	0.17	0.55	0.25
d_M, Delay for Movement [s/veh]	7.81	0.00	0.00	8.24	0.00	0.00	67.91	43.18	35.96	82.52	75.45	69.08
Movement LOS	A	A	A	A	A	A	F	E	E	F	F	F
95th-Percentile Queue Length [veh]	1.32	1.32	1.32	1.19	1.19	1.19	4.24	4.24	4.24	11.17	11.17	11.17
95th-Percentile Queue Length [ft]	32.98	32.98	32.98	29.84	29.84	29.84	105.91	105.91	105.91	279.13	279.13	279.13
d_A, Approach Delay [s/veh]	0.10			1.43			46.52			73.19		
Approach LOS	A			A			E			F		
d_I, Intersection Delay [s/veh]	27.76											
Intersection LOS	F											

**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.147

**Intersection Setup**

Name	Eucalyptus Ave					
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↵↵		↑		↵↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Eucalyptus Ave					
Base Volume Input [veh/h]	9	4	1	6	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	54	49	74	18	35	219
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	6	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	82	0	0	69
Total Hourly Volume [veh/h]	63	57	157	24	41	288
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	15	41	6	11	76
Total Analysis Volume [veh/h]	66	60	165	25	43	303
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.15	0.07	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	14.40	9.66	0.00	0.00	7.84	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.51	0.23	0.00	0.00	0.10	0.00
95th-Percentile Queue Length [ft]	12.80	5.81	0.00	0.00	2.54	0.00
d_A, Approach Delay [s/veh]	12.14		0.00		0.97	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.82					
Intersection LOS	B					

**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram: 3 lanes]			[Diagram: 3 lanes]			[Diagram: 3 lanes]			[Diagram: 3 lanes]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	0	0	0	2	0	0
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	1	1045	159	239	851	1	17	37	7	116	1	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	25	10	0	0	0	0	0	81	1	41
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	7	41	0	0	0	0	0	6	0	33
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	204	158	180	74	0	0	0	0	407	0	688
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1249	349	470	925	1	17	37	7	610	2	863
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	329	92	124	243	0	4	10	2	161	1	227
Total Analysis Volume [veh/h]	1	1315	367	495	974	1	18	39	7	642	2	908
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	11	21	0	16	26	0	0	23	0	0	23	16
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	L	C	R
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	3	20	20	15	32	32	22	22	22	38
g / C, Green / Cycle	0.06	0.33	0.33	0.25	0.53	0.53	0.37	0.37	0.37	0.63
(v / s)_i Volume / Saturation Flow Rate	0.00	0.29	0.26	0.16	0.20	0.20	0.04	0.27	0.00	0.64
s, saturation flow rate [veh/h]	1597	4567	1425	3101	3192	1676	1603	2367	1676	1425
c, Capacity [veh/h]	90	1522	475	775	1682	883	664	890	615	827
d1, Uniform Delay [s]	26.72	18.73	17.96	20.08	8.40	8.40	12.50	18.73	12.05	12.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	6.76	11.57	0.88	0.65	1.25	0.06	1.12	0.00	61.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.01	0.86	0.77	0.64	0.38	0.38	0.10	0.72	0.00	1.10
d, Delay for Lane Group [s/veh]	26.77	25.48	29.53	20.96	9.05	9.64	12.56	19.85	12.05	74.40
Lane Group LOS	C	C	C	C	A	A	B	B	B	F
Critical Lane Group	No	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.01	5.74	5.37	2.79	1.97	2.21	0.49	3.82	0.02	22.29
50th-Percentile Queue Length [ft]	0.34	143.44	134.22	69.83	49.13	55.20	12.29	95.50	0.39	557.17
95th-Percentile Queue Length [veh]	0.02	9.67	9.17	5.03	3.54	3.97	0.88	6.88	0.03	32.35
95th-Percentile Queue Length [ft]	0.61	241.65	229.22	125.70	88.43	99.35	22.11	171.90	0.71	808.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.77	25.48	29.53	20.96	9.26	9.64	12.56	12.56	12.56	19.85	12.05	74.40
Movement LOS	C	C	C	C	A	A	B	B	B	B	B	F
d_A, Approach Delay [s/veh]	26.37			13.20			12.56			51.75		
Approach LOS	C			B			B			D		
d_I, Intersection Delay [s/veh]	30.38											
Intersection LOS	C											
Intersection V/C	0.576											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 36: Grove Ave / Merrill Ave**

Control Type: All-way stop  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 285.7  
 Level Of Service: F  
 Volume to Capacity (v/c): 2.026

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			TTL			TTL		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Base Volume Input [veh/h]	0	0	0	145	0	75	106	350	0	0	100	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	9	0	0	0	35	0	0	123	36
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	48	0	0	39	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	12	0	39	9	23	30	376	0	0	1121	90
Total Hourly Volume [veh/h]	0	12	0	193	9	98	136	809	0	0	1383	222
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	0	51	2	26	36	213	0	0	364	58
Total Analysis Volume [veh/h]	0	13	0	203	9	103	143	852	0	0	1456	234
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	360	413	449	479	479	845	845
Degree of Utilization, x	0.04	0.76	0.32	0.89	0.89	2.03	1.98

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.11	6.35	1.35	9.75	9.75	58.87	57.73
95th-Percentile Queue Length [ft]	2.80	158.67	33.84	243.82	243.82	1471.73	1443.16
Approach Delay [s/veh]	13.38	34.73	41.07		478.64		
Approach LOS	B	D	E		F		
Intersection Delay [s/veh]	285.72						
Intersection LOS	F						

**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	71.313

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	25	1	15	6	1	0	2	552	8	1	165	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	38	0	42	13	32	0	0	117	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	7	0	3	9	39	0	0	32	4
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	94	0	232	0	0	0	0	373	44	113	249	4
Total Hourly Volume [veh/h]	119	1	247	51	1	45	24	996	52	114	563	24
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	0	65	13	0	12	6	262	14	30	148	6
Total Analysis Volume [veh/h]	125	1	260	54	1	47	25	1048	55	120	593	25
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	3.70	0.02	0.97	71.31	0.02	0.09	0.03	0.01	0.00	0.19	0.01	0.00
d_M, Delay for Movement [s/veh]	1828.92	1800.11	1735.85	10000.0	85.60	13.39	8.84	0.00	0.00	12.01	0.00	0.00
Movement LOS	F	F	F	F	F	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh]	41.47	41.47	41.47	8.92	0.39	0.39	33.40	33.40	33.40	0.69	0.00	0.00
95th-Percentile Queue Length [ft]	1036.68	1036.68	1036.68	223.11	9.81	9.81	834.95	834.95	834.95	17.36	0.00	0.00
d_A, Approach Delay [s/veh]	1766.16			5301.13			0.20			1.95		
Approach LOS	F			F			F			A		
d_I, Intersection Delay [s/veh]	520.01											
Intersection LOS	F											

**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	55.9
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.938

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	1	0	0
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	70.00	100.00	70.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	75	549	27	48	945	84	207	28	344	36	4	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	31	32	0	0	88	12	44	0	113	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	21	0	0	0	0	4	3	0	17	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	115	1480	0	90	1198	207	470	114	264	0	78	108
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	242	2061	27	138	2231	307	724	142	738	36	82	130
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	542	7	36	587	81	191	37	194	9	22	34
Total Analysis Volume [veh/h]	255	2169	28	145	2348	323	762	149	777	38	86	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	59	0	10	57	30	30	41	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	60	60	8	58	88	28	38	6	16	16
g / C, Green / Cycle	0.08	0.50	0.50	0.07	0.48	0.73	0.23	0.32	0.05	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.08	0.47	0.02	0.05	0.51	0.23	0.25	0.05	0.02	0.05	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1597	1676	1425
c, Capacity [veh/h]	258	2278	711	207	2202	1017	723	1016	79	225	192
d1, Uniform Delay [s]	54.93	28.70	15.37	54.83	31.07	6.35	46.00	29.24	55.54	47.38	49.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.38	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.07	10.54	0.10	4.28	39.69	0.63	31.93	0.07	4.49	1.06	4.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.99	0.95	0.04	0.70	1.07	0.32	1.05	0.15	0.48	0.38	0.72
d, Delay for Lane Group [s/veh]	78.00	39.24	15.47	59.11	70.75	6.98	77.93	29.31	60.03	48.44	54.64
Lane Group LOS	E	D	B	E	F	A	F	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	4.61	20.60	0.40	2.24	27.80	2.76	13.69	1.52	1.20	2.38	4.13
50th-Percentile Queue Length [ft]	115.23	515.08	10.04	55.88	695.06	68.98	342.30	38.10	30.07	59.52	103.28
95th-Percentile Queue Length [veh]	8.13	28.05	0.72	4.02	38.28	4.97	20.34	2.74	2.16	4.29	7.44
95th-Percentile Queue Length [ft]	203.25	701.18	18.08	100.59	957.06	124.16	508.46	68.58	54.12	107.14	185.90

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	78.00	39.24	15.47	59.11	70.75	6.98	77.93	29.31	0.00	60.03	48.44	54.64
Movement LOS	E	D	B	E	F	A	F	C		E	D	D
d_A, Approach Delay [s/veh]	43.00			62.84			69.98			53.38		
Approach LOS	D			E			E			D		
d_I, Intersection Delay [s/veh]	55.91											
Intersection LOS	E											
Intersection V/C	0.938											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	39.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.968

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↔		↔		↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	2	0	1	1
Pocket Length [ft]	100.00	350.00	250.00	100.00	200.00	200.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	399	272	562	757	246	258
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	0	148	54	0	46
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	8	0	10	7	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	1041	326	523	882	212	440
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1465	598	1243	1700	458	758
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	386	157	327	447	121	199
Total Analysis Volume [veh/h]	1542	629	1308	1789	482	798
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	7	1	6	7	4
Auxiliary Signal Groups		2,7				1
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	5.2	4.8	3.0	5.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	24	30	56	24	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	24	48	28	54	22	22
g / C, Green / Cycle	0.30	0.60	0.35	0.68	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.30	0.40	0.38	0.50	0.14	0.28
s, saturation flow rate [veh/h]	5074	1583	3445	3547	3445	2803
c, Capacity [veh/h]	1522	875	1206	2394	947	771
d1, Uniform Delay [s]	28.00	13.29	26.00	8.53	24.44	29.00
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.32	5.06	41.89	2.18	0.42	25.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

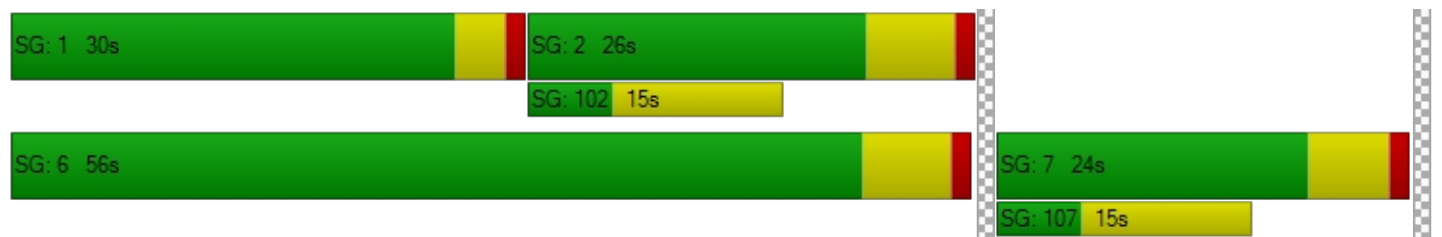
X, volume / capacity	1.01	0.72	1.08	0.75	0.51	1.04
d, Delay for Lane Group [s/veh]	54.32	18.35	67.89	10.71	24.87	54.26
Lane Group LOS	F	B	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	12.24	7.65	16.90	6.92	3.63	9.49
50th-Percentile Queue Length [ft]	305.91	191.25	422.39	172.88	90.87	237.32
95th-Percentile Queue Length [veh]	18.12	12.19	24.90	11.23	6.54	14.83
95th-Percentile Queue Length [ft]	452.89	304.65	622.39	280.70	163.57	370.80

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	54.32	18.35	67.89	10.71	24.87	54.26
Movement LOS	F	B	F	B	C	F
d_A, Approach Delay [s/veh]	43.90		34.86		43.19	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	39.49					
Intersection LOS	D					
Intersection V/C	0.968					

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	84.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.104

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	200.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	180	464	272	201	472	169	269	643	68	466	568	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	0	0	6	18	103	27	0	32	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	10	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	90	309	3	155	338	190	293	2016	177	9	1227	141
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	278	773	275	356	810	365	580	2772	272	475	1841	277
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	203	72	94	213	96	153	729	72	125	484	73
Total Analysis Volume [veh/h]	293	814	289	375	853	384	611	2918	286	500	1938	292
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	12	21	17	14	23	24	24	58	12	17	51	14
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	10	19	36	12	21	45	22	56	68	15	49	63
g / C, Green / Cycle	0.09	0.17	0.33	0.11	0.19	0.41	0.20	0.51	0.62	0.14	0.45	0.57
(v / s)_i Volume / Saturation Flow Rate	0.09	0.18	0.20	0.12	0.19	0.27	0.20	0.64	0.20	0.16	0.42	0.20
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	282	789	438	338	872	554	620	2325	852	423	2034	788
d1, Uniform Delay [s]	50.00	45.50	33.11	49.00	44.27	28.10	43.84	27.00	11.11	47.50	29.38	13.84
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.44	0.11	0.11	0.26	0.11	0.11	0.27
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.79	40.53	7.60	58.66	25.68	6.19	13.69	115.62	0.55	87.72	3.33	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

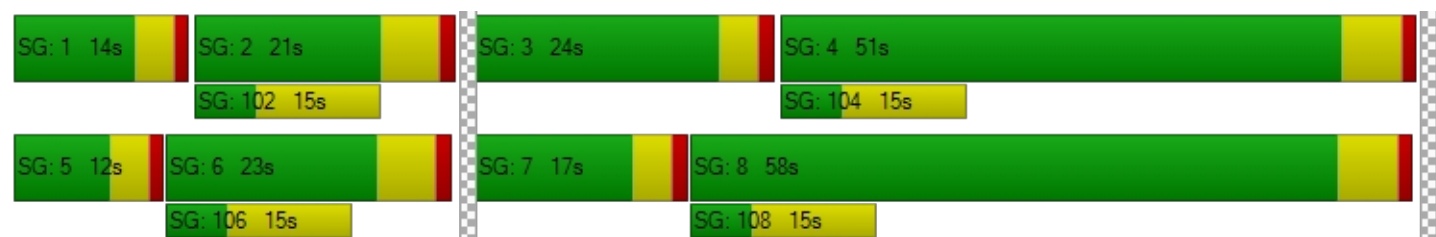
X, volume / capacity	1.04	1.03	0.66	1.11	0.98	0.69	0.99	1.26	0.34	1.18	0.95	0.37
d, Delay for Lane Group [s/veh]	85.79	86.03	40.71	107.66	69.95	34.29	57.53	142.62	11.66	135.22	32.71	14.56
Lane Group LOS	F	F	D	F	E	C	E	F	B	F	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	5.19	9.93	7.39	7.29	9.55	9.01	9.21	43.30	3.33	10.79	15.90	3.95
50th-Percentile Queue Length [ft]	129.75	248.33	184.70	182.25	238.75	225.28	230.24	1082.50	83.21	269.85	397.43	98.77
95th-Percentile Queue Length [veh]	9.05	15.33	11.85	12.18	14.62	13.93	14.19	63.45	5.99	17.34	22.44	7.11
95th-Percentile Queue Length [ft]	226.17	383.37	296.15	304.53	365.45	348.36	354.66	1586.21	149.78	433.45	560.90	177.79

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	85.79	86.03	40.71	107.66	69.95	34.29	57.53	142.62	11.66	135.22	32.71	14.56
Movement LOS	F	F	D	F	E	C	E	F	B	F	C	B
d_A, Approach Delay [s/veh]	76.60			70.23			119.18			49.55		
Approach LOS	E			E			F			D		
d_I, Intersection Delay [s/veh]	84.80											
Intersection LOS	F											
Intersection V/C	1.104											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	137.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.580

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	170	0	586	0	1006	373	395	917	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	1	0	22	81	0	31	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	3	0	1	9	0	11	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	368	0	1344	1016	0	988	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	170	0	958	0	2373	1479	395	1947	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	45	0	252	0	624	389	104	512	0
Total Analysis Volume [veh/h]	0	0	0	179	0	1008	0	2498	1557	416	2049	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	24	0	0	65	0	11	76	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		22	22	22	63	63	9	74
g / C, Green / Cycle		0.22	0.22	0.22	0.63	0.63	0.09	0.74
(v / s)_i Volume / Saturation Flow Rate		0.11	0.35	0.35	0.55	1.09	0.13	0.45
s, saturation flow rate [veh/h]		1597	1425	1425	4567	1425	3101	4567
c, Capacity [veh/h]		351	314	314	2877	898	279	3379
d1, Uniform Delay [s]		34.26	39.00	39.00	15.11	18.50	45.50	6.13
k, delay calibration		0.11	0.50	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		1.14	287.87	287.87	3.87	335.12	224.98	0.82
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

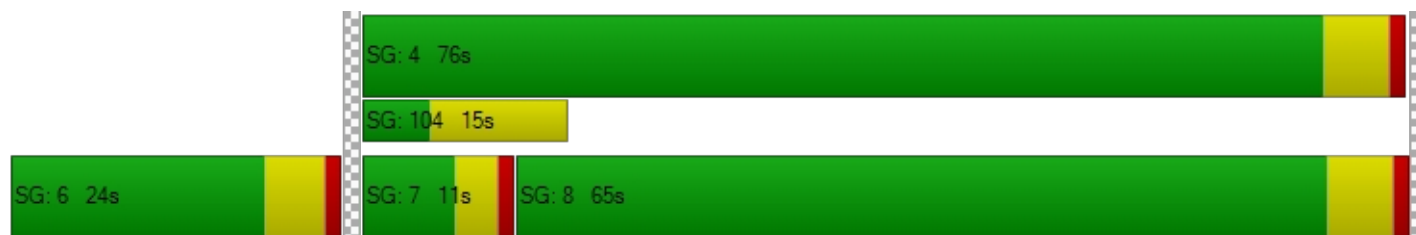
X, volume / capacity		0.51	1.61	1.61	0.87	1.73	1.49	0.61
d, Delay for Lane Group [s/veh]		35.41	326.87	326.87	18.98	353.62	270.48	6.95
Lane Group LOS		D	F	F	B	F	F	A
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		3.81	32.44	32.44	13.79	100.41	12.08	5.07
50th-Percentile Queue Length [ft]		95.17	810.90	810.90	344.70	2510.24	302.10	126.70
95th-Percentile Queue Length [veh]		6.85	51.13	51.13	19.88	161.68	20.09	8.76
95th-Percentile Queue Length [ft]		171.31	1278.22	1278.22	496.94	4042.00	502.27	218.99

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	35.41	326.87	326.87	0.00	18.98	353.62	270.48	6.95	0.00
Movement LOS				D	F	F		B	F	F	A	
d_A, Approach Delay [s/veh]	0.00			282.92			147.47			51.42		
Approach LOS	A			F			F			D		
d_I, Intersection Delay [s/veh]	137.61											
Intersection LOS	F											
Intersection V/C	1.580											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	95.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.130

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↑↵						↵↑↑			↑↑↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	356	0	612	0	0	0	390	816	0	0	958	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	25	0	0	0	0	0	4	18	0	0	6	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	11	0	0	0	0	0	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	474	0	0	0	0	0	858	400	0	0	513	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	866	0	612	0	0	0	1253	1234	0	0	1477	229
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	228	0	161	0	0	0	330	325	0	0	389	60
Total Analysis Volume [veh/h]	912	0	644	0	0	0	1319	1299	0	0	1555	241
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	30	0	0	0	0	33	60	0	0	27	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	28	28	28		31	58	25	25
g / C, Green / Cycle	0.31	0.31	0.31		0.34	0.64	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.32	0.33	0.36		0.43	0.28	0.34	0.17
s, saturation flow rate [veh/h]	1597	1551	1425		3101	4567	4567	1425
c, Capacity [veh/h]	497	483	443		1068	2943	1269	396
d1, Uniform Delay [s]	31.00	31.00	31.00		29.50	7.95	32.50	28.25
k, delay calibration	0.50	0.50	0.50		0.19	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	52.38	62.43	98.23		108.94	0.10	103.26	1.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.04	1.07	1.17		1.24	0.44	1.23	0.61
d, Delay for Lane Group [s/veh]	83.38	93.43	129.23		138.44	8.05	135.76	29.77
Lane Group LOS	F	F	F		F	A	F	C
Critical Lane Group	No	No	Yes		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	17.24	18.10	21.03		26.79	3.39	20.75	4.44
50th-Percentile Queue Length [ft]	430.97	452.48	525.80		669.75	84.69	518.64	110.89
95th-Percentile Queue Length [veh]	24.72	26.23	31.34		40.05	6.10	31.55	7.89
95th-Percentile Queue Length [ft]	617.94	655.71	783.45		1001.34	152.44	788.83	197.24

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	87.71	93.43	122.26	0.00	0.00	0.00	138.44	8.05	0.00	0.00	135.76	29.77
Movement LOS	F	F	F				F	A			F	C
d_A, Approach Delay [s/veh]	102.01			0.00			73.74			121.54		
Approach LOS	F			A			E			F		
d_I, Intersection Delay [s/veh]	95.49											
Intersection LOS	F											
Intersection V/C	1.130											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	1	1	0	1
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	48	710	43	217	708	76	270	782	45	30	221	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	25	0	0	81	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	7	0	0	6	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	57	47	101	102	9	53	28	0	126	93	286
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	799	90	318	897	85	323	810	45	156	314	446
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	210	24	84	236	22	85	213	12	41	83	117
Total Analysis Volume [veh/h]	62	841	95	335	944	89	340	853	47	164	331	469
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	11	21	0	12	22	13	13	24	0	13	24	12
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	19	19	10	23	36	11	22	22	11	22	34
g / C, Green / Cycle	0.08	0.27	0.27	0.14	0.33	0.52	0.16	0.32	0.32	0.15	0.31	0.49
(v / s)_i Volume / Saturation Flow Rate	0.04	0.21	0.08	0.12	0.23	0.07	0.12	0.30	0.04	0.12	0.12	0.37
s, saturation flow rate [veh/h]	1416	4050	1264	2750	4050	1264	2750	2831	1264	1416	2831	1264
c, Capacity [veh/h]	117	1102	344	393	1344	615	432	903	403	215	888	573
d1, Uniform Delay [s]	30.78	23.41	20.06	29.28	20.37	9.94	28.37	23.22	16.85	28.48	18.67	16.61
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.35
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.64	5.03	1.99	5.30	3.09	0.11	3.21	5.89	0.13	5.54	0.26	8.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

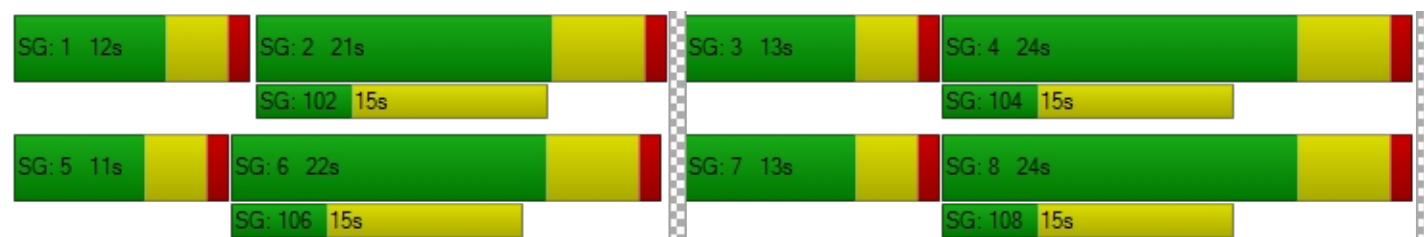
X, volume / capacity	0.53	0.76	0.28	0.85	0.70	0.14	0.79	0.94	0.12	0.76	0.37	0.82
d, Delay for Lane Group [s/veh]	34.42	28.44	22.04	34.59	23.45	10.05	31.58	29.12	16.98	34.02	18.93	25.56
Lane Group LOS	C	C	C	C	C	B	C	C	B	C	B	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.06	4.34	1.30	2.92	4.53	0.70	2.72	6.78	0.50	2.77	1.91	6.85
50th-Percentile Queue Length [ft]	26.49	108.56	32.54	72.96	113.16	17.44	68.11	169.51	12.43	69.28	47.66	171.37
95th-Percentile Queue Length [veh]	1.91	7.76	2.34	5.25	8.02	1.26	4.90	11.05	0.90	4.99	3.43	11.15
95th-Percentile Queue Length [ft]	47.68	193.99	58.57	131.32	200.40	31.40	122.60	276.27	22.38	124.70	85.79	278.72

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.42	28.44	22.04	34.59	23.45	10.05	31.58	29.12	16.98	34.02	18.93	25.56
Movement LOS	C	C	C	C	C	B	C	C	B	C	B	C
d_A, Approach Delay [s/veh]	28.21			25.31			29.33			24.72		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.91											
Intersection LOS	C											
Intersection V/C	0.777											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type:	Signalized	Delay (sec / veh):	25.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↔↔↔↔			↔↔			↔↔			↔↔		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	2	1	0	0	1	0	1	2	0	0
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	10	574	914	66	624	6	7	387	46	472	91	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	0	0	64	17	5	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	5	0	0	4	2	2	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	114	72	11	150	0	0	16	0	173	16	11
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	713	986	77	842	25	14	403	46	645	107	37
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	188	259	20	222	7	4	106	12	170	28	10
Total Analysis Volume [veh/h]	11	751	1038	81	886	26	15	424	48	679	113	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	18	10	21	0	10	21	0	18	29	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	3	21	39	6	24	24	4	19	16	31
g / C, Green / Cycle	0.05	0.30	0.55	0.09	0.34	0.34	0.05	0.27	0.23	0.45
(v / s)_i Volume / Saturation Flow Rate	0.01	0.17	0.42	0.05	0.19	0.19	0.01	0.26	0.22	0.10
s, saturation flow rate [veh/h]	1573	4501	2486	1573	3146	1628	1573	1652	3056	1581
c, Capacity [veh/h]	74	1336	1299	140	1064	551	81	448	698	709
d1, Uniform Delay [s]	31.99	20.77	13.70	30.63	18.94	18.94	31.79	24.99	26.78	11.78
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.16	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.90	1.72	5.21	3.75	2.17	4.16	1.09	13.88	10.55	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.15	0.56	0.80	0.58	0.56	0.57	0.19	0.95	0.97	0.21
d, Delay for Lane Group [s/veh]	32.89	22.49	18.91	34.38	21.10	23.10	32.88	38.88	37.33	11.93
Lane Group LOS	C	C	B	C	C	C	C	D	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.19	3.32	6.23	1.37	3.85	4.30	0.25	7.91	6.11	1.27
50th-Percentile Queue Length [ft]	4.68	82.88	155.81	34.36	96.23	107.40	6.34	197.65	152.85	31.71
95th-Percentile Queue Length [veh]	0.34	5.97	10.33	2.47	6.93	7.69	0.46	12.52	10.17	2.28
95th-Percentile Queue Length [ft]	8.42	149.18	258.16	61.84	173.21	192.37	11.41	312.93	254.23	57.08

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.89	22.49	18.91	34.38	21.75	23.10	32.88	38.88	0.00	37.33	11.93	11.93
Movement LOS	C	C	B	C	C	C	C	D		D	B	B
d_A, Approach Delay [s/veh]	20.49			22.81			38.67			32.68		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	25.52											
Intersection LOS	C											
Intersection V/C	0.856											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.689

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	204	456	123	160	576	280	389	948	177	93	318	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	14	0	0	44	10	3	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	7	0	0	5	2	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	1097	0	38	978	134	124	0	0	0	0	42
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	204	1574	123	198	1603	426	517	948	177	93	318	76
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	414	32	52	422	112	136	249	47	24	84	20
Total Analysis Volume [veh/h]	215	1657	129	208	1687	448	544	998	186	98	335	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	3.6	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	26	0	21	27	21	21	22	0	21	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	39	39	10	39	60	19	26	26	7	14	14
g / C, Green / Cycle	0.11	0.43	0.43	0.11	0.43	0.66	0.21	0.29	0.29	0.08	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.07	0.36	0.09	0.07	0.37	0.31	0.18	0.22	0.13	0.03	0.07	0.06
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	344	1983	619	338	1974	906	651	1308	408	253	722	225
d1, Uniform Delay [s]	38.23	22.61	15.84	38.30	23.00	8.72	34.07	29.33	26.36	39.19	34.41	33.79
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.41	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.87	4.36	0.76	1.83	4.98	1.58	2.93	0.95	0.80	0.97	0.46	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

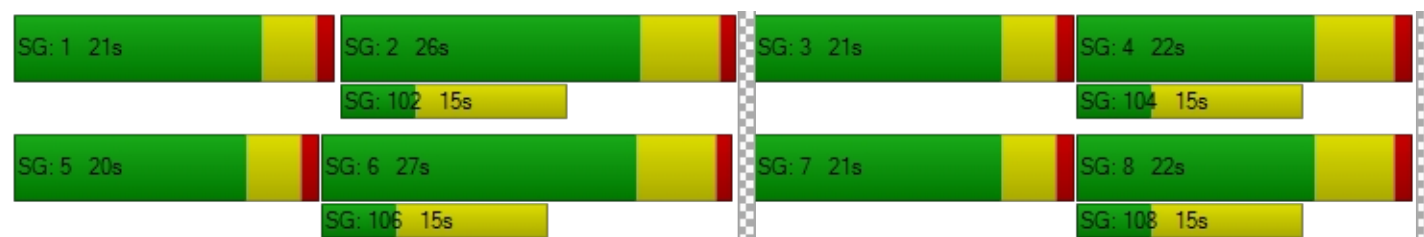
X, volume / capacity	0.63	0.84	0.21	0.62	0.85	0.49	0.84	0.76	0.46	0.39	0.46	0.35
d, Delay for Lane Group [s/veh]	40.10	26.97	16.60	40.14	27.98	10.30	37.00	30.28	27.16	40.15	34.88	34.73
Lane Group LOS	D	C	B	D	C	B	D	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.27	10.15	1.66	2.20	10.58	4.17	5.68	6.28	3.19	1.03	2.16	1.56
50th-Percentile Queue Length [ft]	56.82	253.84	41.55	54.97	264.43	104.13	142.04	157.00	79.70	25.70	54.12	39.00
95th-Percentile Queue Length [veh]	4.09	15.38	2.99	3.96	15.91	7.50	9.59	10.39	5.74	1.85	3.90	2.81
95th-Percentile Queue Length [ft]	102.28	384.49	74.78	98.95	397.77	187.44	239.77	259.74	143.47	46.26	97.41	70.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	40.10	26.97	16.60	40.14	27.98	10.30	37.00	30.28	27.16	40.15	34.88	34.73
Movement LOS	D	C	B	D	C	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	27.71			25.68			32.06			35.86		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	28.76											
Intersection LOS	C											
Intersection V/C	0.689											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 46: Hellman Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	10.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.450

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	↵↵		↑↑		↵↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	53	55	172	14	34	144
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	409	0	0	427
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	55	581	14	34	571
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	14	153	4	9	150
Total Analysis Volume [veh/h]	56	58	612	15	36	601
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.8	0.0	4.8	0.0	0.0	4.8
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	23	0	37	0	0	37
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	21	21	35	35	35	35
g / C, Green / Cycle	0.35	0.35	0.58	0.58	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.21	0.21	0.06	0.40
s, saturation flow rate [veh/h]	1416	1264	1487	1475	635	1487
c, Capacity [veh/h]	496	442	867	860	408	867
d1, Uniform Delay [s]	13.20	13.28	6.60	6.61	9.48	8.74
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.46	0.61	1.17	1.20	0.43	4.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.11	0.13	0.36	0.36	0.09	0.69
d, Delay for Lane Group [s/veh]	13.66	13.90	7.77	7.81	9.90	13.27
Lane Group LOS	B	B	A	A	A	B
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.50	0.53	1.71	1.72	0.27	4.73
50th-Percentile Queue Length [ft]	12.52	13.27	42.87	43.04	6.70	118.26
95th-Percentile Queue Length [veh]	0.90	0.96	3.09	3.10	0.48	8.30
95th-Percentile Queue Length [ft]	22.53	23.89	77.16	77.47	12.06	207.43

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.66	13.90	7.79	7.81	9.90	13.27
Movement LOS	B	B	A	A	A	B
d_A, Approach Delay [s/veh]	13.78		7.79		13.08	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	10.73					
Intersection LOS	B					
Intersection V/C	0.450					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 47: Hellman Ave/Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.963

**Intersection Setup**

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	573	170	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	62	18	69	57	11
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	9	18	22	19	18	10
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	605	366	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	80	40	1266	611	21
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	21	11	333	161	6
Total Analysis Volume [veh/h]	56	84	42	1333	643	22
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.8	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	12	0	0	78	78	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	1.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	10	76	76	76	76
g / C, Green / Cycle	0.11	0.11	0.84	0.84	0.84	0.84
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.07	0.90	0.22	0.23
s, saturation flow rate [veh/h]	1416	1264	613	1487	1487	1470
c, Capacity [veh/h]	157	140	563	1256	1256	1241
d1, Uniform Delay [s]	37.02	38.09	2.17	7.00	1.40	1.41
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.19	17.40	0.26	43.47	0.52	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.36	0.60	0.07	1.06	0.26	0.27
d, Delay for Lane Group [s/veh]	43.21	55.49	2.43	50.47	1.92	1.94
Lane Group LOS	D	E	A	F	A	A
Critical Lane Group	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.37	2.38	0.13	19.61	0.42	0.42
50th-Percentile Queue Length [ft]	34.29	59.45	3.22	490.30	10.40	10.49
95th-Percentile Queue Length [veh]	2.47	4.28	0.23	28.33	0.75	0.76
95th-Percentile Queue Length [ft]	61.72	107.02	5.80	708.19	18.71	18.88

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.21	55.49	2.43	50.47	1.93	1.94
Movement LOS	D	E	A	F	A	A
d_A, Approach Delay [s/veh]	50.58		49.01		1.93	
Approach LOS	D		D		A	
d_I, Intersection Delay [s/veh]	34.75					
Intersection LOS	C					
Intersection V/C	0.963					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 66: Archibald Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	208.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.354

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	0	868	30	47	1093	0	0	0	0	2	0	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	32	44	0	0	12	71	217	0	88	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	3	0	0	4	14	10	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	347	1559	40	107	1287	20	29	52	328	26	60	104
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	379	2474	70	154	2396	105	256	52	416	28	60	126
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	651	18	41	631	28	67	14	109	7	16	33
Total Analysis Volume [veh/h]	399	2604	74	162	2522	111	269	55	438	29	63	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	17	56	0	10	49	0	0	24	0	0	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	15	54	54	8	47	47	22	22	22	22
g / C, Green / Cycle	0.17	0.60	0.60	0.09	0.52	0.52	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.25	0.80	0.81	0.10	0.79	0.80	0.25	0.03	0.31	0.15
s, saturation flow rate [veh/h]	1597	1676	1660	1597	1676	1652	1064	1676	1425	1482
c, Capacity [veh/h]	266	1006	996	142	875	863	196	410	348	407
d1, Uniform Delay [s]	37.50	18.00	18.00	41.00	21.50	21.50	42.08	26.56	34.00	30.17
k, delay calibration	0.27	0.50	0.50	0.11	0.50	0.50	0.27	0.11	0.39	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	235.10	155.90	161.63	81.03	232.66	242.65	183.14	0.15	133.13	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.50	1.33	1.34	1.14	1.50	1.53	1.37	0.13	1.26	0.55
d, Delay for Lane Group [s/veh]	272.60	173.90	179.63	122.03	254.16	264.15	225.22	26.71	167.13	31.34
Lane Group LOS	F	F	F	F	F	F	F	C	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	22.82	59.17	60.18	6.15	71.52	72.86	14.25	0.90	20.05	4.24
50th-Percentile Queue Length [ft]	570.49	1479.25	1504.60	153.79	1787.94	1821.60	356.19	22.53	501.29	106.01
95th-Percentile Queue Length [veh]	36.05	88.14	90.00	10.68	110.14	112.72	23.60	1.62	30.82	7.62
95th-Percentile Queue Length [ft]	901.14	2203.62	2250.01	267.00	2753.59	2818.02	589.92	40.55	770.49	190.43

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	272.60	176.68	179.63	122.03	258.93	264.15	225.22	26.71	167.13	31.34	31.34	31.34
Movement LOS	F	F	F	F	F	F	F	C	F	C	C	C
d_A, Approach Delay [s/veh]	189.19			251.21			177.50			31.34		
Approach LOS	F			F			F			C		
d_I, Intersection Delay [s/veh]	207.99											
Intersection LOS	F											
Intersection V/C	1.354											

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**A # 5H98 OPENING YEAR (2023) PLUS PROJECT AM/PM PEAK HOUR**

Option 1: Copy of Euclid Ave / Chino Ave

Number	16											
Intersection	Euclid Ave / Chino Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	48	783	108	29	852	64	82	127	48	71	136	26
Total Analysis Volume [veh/h]	71	1028	114	33	1679	67	86	383	77	75	420	28

**Intersection Settings**

Cycle Length [s]	80											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	33	0	20	43	0	0	27	0	0	27	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.07	0.53	0.53	0.06	0.51	0.51	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.04	0.32	0.08	0.02	0.53	0.05	0.10	0.23	0.05	0.08	0.27	0.27
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	845	1676	1425	897	1658	1658
c, Capacity [veh/h]	119	1688	753	94	1637	731	102	486	413	150	481	481
X, volume / capacity	0.59	0.61	0.15	0.35	1.03	0.09	0.84	0.79	0.19	0.50	0.93	0.93
d, Delay for Lane Group [s/veh]	40.50	14.75	10.08	38.42	48.59	10.21	56.11	29.84	21.53	40.38	42.56	42.56
Lane Group LOS	D	B	B	D	F	B	E	C	C	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh]	1.43	5.78	0.97	0.65	19.19	0.58	2.09	6.68	1.04	1.52	9.63	9.63

50th-Percentile Queue Length [ft]	35.86	144.62	24.28	16.27	479.78	14.42	52.13	166.89	25.93	38.07	240.77
95th-Percentile Queue Length [veh]	2.58	9.73	1.75	1.17	26.90	1.04	3.75	10.91	1.87	2.74	14.72
95th-Percentile Queue Length [ft]	64.55	243.23	43.71	29.29	672.52	25.96	93.83	272.82	46.68	68.52	368.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	40.50	14.75	10.08	38.42	48.59	10.21	56.11	29.84	21.53	40.38	42.56	42.56
Movement LOS	D	B	B	D	F	B	E	C	C	D	D	D
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	15.82			46.96			32.80			42.25		
Approach LOS	B			D			C			D		
d_I, Intersection Delay [s/veh]	35.15											
Intersection LOS	D											
Intersection V/C	0.841											

Option 1: Copy of Euclid Ave / Chino Ave

Number	16											
Intersection	Euclid Ave / Chino Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	45	1118	172	18	817	63	59	204	46	71	82	10
Total Analysis Volume [veh/h]	76	1995	181	19	1107	66	62	467	71	75	381	13

Intersection Settings

Cycle Length [s]	90											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	52	0	10	52	0	0	28	0	0	28	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.07	0.58	0.58	0.04	0.55	0.55	0.27	0.27	0.27	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.05	0.63	0.13	0.01	0.35	0.05	0.07	0.28	0.05	0.09	0.24	
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	888	1676	1425	830	1667	
c, Capacity [veh/h]	114	1844	823	71	1758	785	108	451	383	80	448	
X, volume / capacity	0.66	1.08	0.22	0.27	0.63	0.08	0.57	1.04	0.19	0.94	0.88	
d, Delay for Lane Group [s/veh]	47.20	66.02	9.81	43.55	15.64	9.74	49.08	75.25	25.55	78.36	41.79	
Lane Group LOS	D	F	A	D	B	A	D	F	C	E	D	
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	No	No	
50th-Percentile Queue Length [veh]	1.79	27.76	1.63	0.43	7.11	0.59	1.48	14.51	1.14	2.37	8.99	

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50th-Percentile Queue Length [ft]	44.79	694.09	40.86	10.86	177.70	14.80	37.12	362.85	28.52	59.15	224.74
95th-Percentile Queue Length [veh]	3.22	38.77	2.94	0.78	11.48	1.07	2.67	21.20	2.05	4.26	13.91
95th-Percentile Queue Length [ft]	80.62	969.33	73.55	19.55	287.01	26.64	66.82	530.09	51.34	106.47	347.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	47.20	66.02	9.81	43.55	15.64	9.74	49.08	75.25	25.55	78.36	41.79	41.79
Movement LOS	D	F	A	D	B	A	D	F	C	E	D	D
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	60.86			15.75			66.66			47.64		
Approach LOS	E			B			E			D		
d_I, Intersection Delay [s/veh]	48.35											
Intersection LOS	D											
Intersection V/C	0.915											

## Option 1: Copy of Grove Ave / Chino Ave

Number	17											
Intersection	Grove Ave / Chino Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	48	243	5	28	215	24	56	50	20	7	48	14
Total Analysis Volume [veh/h]	53	308	12	29	484	25	59	311	23	21	333	15

## Intersection Settings

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	31	0	0	31	0	0	29	0	0	29	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

## Lane Group Calculations

g / C, Green / Cycle	0.56	0.56	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.24	0.33	0.27	0.23
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1531	1633	1470	1618
c, Capacity [veh/h]	929	982	507	545
X, volume / capacity	0.40	0.55	0.78	0.68
d, Delay for Lane Group [s/veh]	8.70	10.70	22.42	20.49
Lane Group LOS	A	B	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	2.02	3.39	4.80	4.19

50th-Percentile Queue Length [ft]	50.54	84.84	119.90	104.65
95th-Percentile Queue Length [veh]	3.64	6.11	8.39	7.53
95th-Percentile Queue Length [ft]	90.97	152.71	209.69	188.36

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	8.70	8.70	8.70	10.70	10.70	10.70	22.42	22.42	22.42	20.49	20.49	20.49
Movement LOS	A	A	A	B	B	B	C	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	Yes	No	No	No	No
d_A, Approach Delay [s/veh]	8.70			10.70			22.42			20.49		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	15.17											
Intersection LOS	B											
Intersection V/C	0.597											

Option 1: Copy of Grove Ave / Chino Ave

Number	17											
Intersection	Grove Ave / Chino Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	23	343	25	17	228	15	81	136	26	9	25	19
Total Analysis Volume [veh/h]	27	498	40	18	284	16	85	418	28	19	327	20

**Intersection Settings**

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	20	0	0	20	0	0	40	0	0	40	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.48	0.48	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.35	0.20	0.35	0.22
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1632	1627	1537	1629
c, Capacity [veh/h]	852	851	648	676
X, volume / capacity	0.66	0.37	0.82	0.54
d, Delay for Lane Group [s/veh]	16.17	11.14	20.75	15.66
Lane Group LOS	B	B	C	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	5.10	2.19	6.20	3.43



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50th-Percentile Queue Length [ft]	127.42	54.87	155.11	85.85
95th-Percentile Queue Length [veh]	8.80	3.95	10.29	6.18
95th-Percentile Queue Length [ft]	219.98	98.77	257.23	154.52

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.17	16.17	16.17	11.14	11.14	11.14	20.75	20.75	20.75	15.66	15.66	15.66
Movement LOS	B	B	B	B	B	B	C	C	C	B	B	B
Critical Movement	No	No	No	No	No	No	No	Yes	No	No	No	No
d_A, Approach Delay [s/veh]	16.17			11.14			20.75			15.66		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	16.53											
Intersection LOS	B											
Intersection V/C	0.692											

Option 1: Copy of SR71 NB Ramp / Grand Ave

Number	22											
Intersection	SR71 NB Ramp / Grand Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Roswell Ave			Roswell Ave			Grand Ave			Grand Ave		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	417	68	48	29	0	441	196	815	177	0	914	20
Total Analysis Volume [veh/h]	439	72	51	31	0	464	206	1175	186	0	1332	21

**Intersection Settings**

Cycle Length [s]	70											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Split	Split	Split	Permiss	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups						1,3						
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	9	0	15	15	40	0	0	25	0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No		No	No	No			No	
Maximum Recall		No		No		No	No	No			No	
Pedestrian Recall		No		No		No	No	No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.25	0.25	0.25	0.10	0.61	0.18	0.52	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.04	0.02	0.37	0.15	0.29	0.25	0.23	
so, Base Saturation Flow per Lane [veh/h/tr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1127	1202	1264	1416	1264	1416	4050	4050	1471	
c, Capacity [veh/h]	370	391	318	142	737	259	2095	1227	445	
X, volume / capacity	0.67	0.67	0.16	0.22	0.63	0.80	0.56	0.83	0.76	
d, Delay for Lane Group [s/veh]	28.25	27.12	20.67	29.75	12.45	32.86	12.59	29.18	33.61	
Lane Group LOS	C	C	C	C	B	C	B	C	C	
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	3.88	3.99	0.62	0.48	4.08	3.42	3.55	5.35	5.91	

50th-Percentile Queue Length [ft]	97.10	99.65	15.42	11.98	101.95	85.55	88.76	133.70	147.86
95th-Percentile Queue Length [veh]	6.99	7.17	1.11	0.86	7.34	6.16	6.39	9.14	9.90
95th-Percentile Queue Length [ft]	174.78	179.36	27.76	21.56	183.51	154.00	159.76	228.51	247.56

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.76	27.12	20.67	29.75	0.00	12.45	32.86	12.59	0.00	0.00	30.24	33.61
Movement LOS	C	C	C	C		B	C	B			C	C
Critical Movement	No	No	No	No		No	No	No	No		No	Yes
d_A, Approach Delay [s/veh]	27.04			13.53			15.61			30.29		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	22.27											
Intersection LOS	C											
Intersection V/C	0.922											

Option 1: Copy of SR71 NB Ramp / Grand Ave

Number	22											
Intersection	SR71 NB Ramp / Grand Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Roswell Ave			Roswell Ave						Grand Ave		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	372	108	189	83	0	423	295	1490	298	0	1372	36
Total Analysis Volume [veh/h]	392	114	199	87	0	445	311	2071	314	0	1974	38

Intersection Settings

Cycle Length [s]	110											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Split	Split	Split	Permiss	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups						1,3						
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	26	0	11	0	29	29	73	0	0	44	0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No		No	No	No			No	
Maximum Recall		No		No		No	No	No			No	
Pedestrian Recall		No		No		No	No	No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.21	0.21	0.21	0.08	0.58	0.24	0.63	0.37	0.37	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.21	0.16	0.06	0.35	0.22	0.51	0.37	0.34	
so, Base Saturation Flow per Lane [veh/h/tr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Arrival type	3			3			3		3	
s, saturation flow rate [veh/h]	1127	1275	1264	1416	1264	1416	4050	4050	1467	
c, Capacity [veh/h]	287	313	260	116	710	345	2548	1480	536	
X, volume / capacity	0.85	0.84	0.77	0.75	0.63	0.90	0.81	1.02	0.94	
d, Delay for Lane Group [s/veh]	61.32	55.87	46.52	58.74	20.45	60.32	18.45	63.29	59.88	
Lane Group LOS	E	E	D	E	C	E	B	F	E	
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	7.90	7.96	5.33	2.59	7.72	9.80	11.99	16.37	16.19	

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50th-Percentile Queue Length [ft]	197.59	199.00	133.21	64.79	193.06	244.92	299.83	409.30	404.64
95th-Percentile Queue Length [veh]	12.51	12.59	9.11	4.67	12.28	14.93	17.67	23.31	22.78
95th-Percentile Queue Length [ft]	312.86	314.68	227.85	116.63	307.00	373.25	441.82	582.75	569.59

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	59.30	55.87	46.52	58.74	0.00	20.45	60.32	18.45	0.00	0.00	62.49	59.88
Movement LOS	E	E	D	E		C	E	B			E	E
Critical Movement	No	No	No	No		No	No	No	No		Yes	No
d_A, Approach Delay [s/veh]	55.12			26.71			23.91			62.44		
Approach LOS	E			C			C			E		
d_I, Intersection Delay [s/veh]	41.85											
Intersection LOS	D											
Intersection V/C	1.079											

## Option 1: Copy of Grove Ave / Edison Ave

Number	27											
Intersection	Grove Ave / Edison Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	21	166	22	35	115	22	32	163	9	47	389	71
Total Analysis Volume [veh/h]	36	234	29	38	394	23	34	355	89	61	782	77

## Intersection Settings

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	22	0	0	22	0	0	38	0	0	38	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

## Lane Group Calculations

g / C, Green / Cycle	0.31	0.31	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.20	0.28	0.33	0.58
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1478	1623	1442	1591
c, Capacity [veh/h]	521	563	862	945
X, volume / capacity	0.57	0.81	0.55	0.97
d, Delay for Lane Group [s/veh]	22.18	31.77	9.19	36.08
Lane Group LOS	C	C	A	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	3.49	6.72	2.95	14.58

50th-Percentile Queue Length [ft]	87.36	167.98	73.82	364.48
95th-Percentile Queue Length [veh]	6.29	10.97	5.31	20.84
95th-Percentile Queue Length [ft]	157.25	274.26	132.87	521.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	22.18	22.18	22.18	31.77	31.77	31.77	9.19	9.19	9.19	36.08	36.08	36.08
Movement LOS	C	C	C	C	C	C	A	A	A	D	D	D
Critical Movement	No	No	No	No	No	No	No	No	No	No	Yes	No
d_A, Approach Delay [s/veh]	22.18			31.77			9.19			36.08		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	27.26											
Intersection LOS	C											
Intersection V/C	0.858											

Option 1: Copy of Grove Ave / Edison Ave

Number	27											
Intersection	Grove Ave / Edison Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	12	177	52	61	173	33	48	401	17	28	189	17
Total Analysis Volume [veh/h]	116	337	72	67	236	35	51	872	51	44	513	20

**Intersection Settings**

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	24	0	0	24	0	0	36	0	0	36	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.34	0.34	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.38	0.26	0.60	0.42
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1375	1318	1613	1390
c, Capacity [veh/h]	541	520	902	787
X, volume / capacity	0.97	0.65	1.08	0.73
d, Delay for Lane Group [s/veh]	52.85	22.84	69.28	13.93
Lane Group LOS	D	C	F	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	10.97	3.96	22.89	4.85



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50th-Percentile Queue Length [ft]	274.35	98.98	572.36	121.18
95th-Percentile Queue Length [veh]	16.41	7.13	32.59	8.46
95th-Percentile Queue Length [ft]	410.17	178.16	814.65	211.44

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.85	52.85	52.85	22.84	22.84	22.84	69.28	69.28	69.28	13.93	13.93	13.93
Movement LOS	D	D	D	C	C	C	E	E	E	B	B	B
Critical Movement	No	No	No	No	No	No	No	Yes	No	No	No	No
d_A, Approach Delay [s/veh]	52.85			22.84			69.28			13.93		
Approach LOS	D			C			E			B		
d_I, Intersection Delay [s/veh]	45.97											
Intersection LOS	D											
Intersection V/C	0.986											

Option 1: Copy of Archibald Ave / Edison Ave

Number	28											
Intersection	Archibald Ave / Edison Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	173	876	239	30	356	82	39	130	47	151	275	50
Total Analysis Volume [veh/h]	417	2005	612	37	1784	140	160	326	279	739	586	69

**Intersection Settings**

Cycle Length [s]	100											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	43	26	10	36	0	10	21	17	26	37	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.14	0.48	0.05	0.39	0.39	0.08	0.10	0.24	0.26	0.26		
(v / s)_i Volume / Saturation Flow Rate	0.13	0.44	0.01	0.39	0.10	0.05	0.07	0.24	0.13	0.05		
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3101	4567	3101	4567	1425	3101	4567	3101	4567	1425		
c, Capacity [veh/h]	446	2178	163	1760	549	242	478	738	1209	377		
X, volume / capacity	0.93	0.92	0.23	1.01	0.25	0.66	0.68	1.00	0.48	0.18		
d, Delay for Lane Group [s/veh]	51.69	32.26	46.14	55.69	22.07	47.90	44.88	53.83	31.31	28.64		
Lane Group LOS	D	C	D	F	C	D	D	F	C	C		
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No		
50th-Percentile Queue Length [veh]	5.50	14.91	0.44	16.95	2.27	1.96	2.57	10.14	3.81	1.25		

50th-Percentile Queue Length [ft]	137.62	372.65	11.05	423.68	56.66	49.08	64.26	253.39	95.35	31.19
95th-Percentile Queue Length [veh]	9.35	21.24	0.80	23.93	4.08	3.53	4.63	15.37	6.87	2.25
95th-Percentile Queue Length [ft]	233.81	530.94	19.89	598.20	101.99	88.34	115.67	384.22	171.64	56.13

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	51.69	32.26	0.00	46.14	55.69	22.07	47.90	44.88	0.00	53.83	31.31	28.64
Movement LOS	D	C		D	F	C	D	D		F	C	C
Critical Movement	No	No	No	No	Yes	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	35.61			53.11			45.87			43.12		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.56											
Intersection LOS	D											
Intersection V/C	0.835											

Option 1: Copy of Archibald Ave / Edison Ave

Number	28											
Intersection	Archibald Ave / Edison Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	43	544	164	36	812	52	97	314	115	256	145	35
Total Analysis Volume [veh/h]	354	2113	704	55	2135	178	203	707	447	669	438	49

Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	61	27	10	55	0	28	22	16	27	21	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.11	0.48	0.05	0.42	0.42	0.09	0.15	0.21	0.27	0.27		
(v / s)_i Volume / Saturation Flow Rate	0.11	0.46	0.02	0.47	0.12	0.07	0.15	0.22	0.10	0.03		
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3101	4567	3101	4567	1425	3101	4567	3101	4567	1425		
c, Capacity [veh/h]	346	2207	161	1933	603	290	693	641	1210	377		
X, volume / capacity	1.02	0.96	0.34	1.10	0.30	0.70	1.02	1.04	0.36	0.13		
d, Delay for Lane Group [s/veh]	81.63	41.33	56.17	89.93	24.04	55.83	72.30	77.07	36.05	33.73		
Lane Group LOS	F	D	E	F	C	E	F	F	D	C		
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No		
50th-Percentile Queue Length [veh]	6.48	20.55	0.81	27.40	3.39	3.02	8.10	11.86	3.40	1.08		

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50th-Percentile Queue Length [ft]	162.06	513.85	20.33	685.01	84.83	75.51	202.45	296.59	84.96	26.94
95th-Percentile Queue Length [veh]	10.75	27.99	1.46	38.61	6.11	5.44	12.88	17.91	6.12	1.94
95th-Percentile Queue Length [ft]	268.78	699.73	36.59	965.28	152.70	135.93	322.10	447.83	152.93	48.49

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	81.63	41.33	0.00	56.17	89.93	24.04	55.83	72.30	0.00	77.07	36.05	33.73
Movement LOS	F	D		E	F	C	E	F		F	D	C
Critical Movement	No	No	No	No	Yes	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	47.11			84.19			68.62			59.69		
Approach LOS	D			F			E			E		
d_I, Intersection Delay [s/veh]	64.78											
Intersection LOS	E											
Intersection V/C	0.952											

Option 1: Copy of Milliken Ave / Cantu-Galleano Ranch Rd

Number	29											
Intersection	Milliken Ave / Cantu-Galleano Ranch Rd											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	106	428	253	95	173	24	24	261	60	133	398	174
Total Analysis Volume [veh/h]	157	904	439	208	569	101	204	1646	65	544	1472	244

**Intersection Settings**

Cycle Length [s]	70											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	21	13	13	21	36	36	23	13	13	25	13
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.16	0.27	0.46	0.16	0.27	0.79	0.49	0.30	0.49	0.16	0.00	0.16
(v / s)_i Volume / Saturation Flow Rate	0.49	0.28	0.31	0.33	0.12	0.07	0.63	0.36	0.05	0.18	0.32	0.17
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	322	3192	1425	626	4567	1425	322	4567	1425	3101	4567	1425
c, Capacity [veh/h]	146	866	607	187	1240	1075	246	1370	647	487	0	224
X, volume / capacity	1.08	1.04	0.72	1.11	0.46	0.09	0.83	1.20	0.10	1.12	0.00	1.09
d, Delay for Lane Group [s/veh]	129.62	67.99	24.02	99.93	22.45	2.31	50.63	116.81	10.99	88.69	0.00	85.14
Lane Group LOS	F	F	C	F	C	A	D	F	B	F	A	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	6.29	11.55	6.20	3.27	2.49	0.17	5.10	18.41	0.51	7.78	0.00	6.93

50th-Percentile Queue Length [ft]	157.17	288.79	155.09	81.69	62.17	4.19	127.42	460.32	12.69	194.45	0.00	173.21
95th-Percentile Queue Length [veh]	10.72	17.55	10.29	5.88	4.48	0.30	8.80	28.22	0.91	12.94	0.00	11.66
95th-Percentile Queue Length [ft]	268.03	438.68	257.21	147.04	111.91	7.55	219.98	705.57	22.83	323.61	0.00	291.56

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	129.62	67.99	24.02	99.93	22.45	2.31	50.63	116.81	10.99	88.69	0.00	85.14
Movement LOS	F	F	C	F	C	A	D	F	B	F	A	F
Critical Movement	Yes	No	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	61.57			38.49			106.17			30.54		
Approach LOS	E			D			F			C		
d_I, Intersection Delay [s/veh]	60.81											
Intersection LOS	E											
Intersection V/C	1.249											

Option 1: Copy of Milliken Ave / Cantu-Galleano Ranch Rd

Number	29											
Intersection	Milliken Ave / Cantu-Galleano Ranch Rd											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	70	241	141	281	374	39	28	355	179	296	295	71
Total Analysis Volume [veh/h]	112	727	598	480	809	260	144	2081	278	595	2298	281

Intersection Settings

Cycle Length [s]	110											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	11	25	21	18	32	12	12	46	11	21	55	18
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.08	0.21	0.40	0.15	0.27	0.38	0.09	0.40	0.50	0.17	0.48	0.65
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.42	0.15	0.18	0.18	0.09	0.46	0.20	0.19	0.50	0.20
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	1597	3192	1425	3101	4567	1425	1597	4567	1425	3101	4567	1425
c, Capacity [veh/h]	131	667	542	451	1245	516	145	1827	684	536	2200	891
X, volume / capacity	0.86	1.09	1.10	1.06	0.65	0.50	0.99	1.14	0.41	1.11	1.04	0.32
d, Delay for Lane Group [s/veh]	64.45	105.12	104.51	86.41	37.99	28.87	82.81	97.35	19.35	101.87	52.01	10.07
Lane Group LOS	E	F	F	F	D	C	F	F	B	F	F	B
Critical Lane Group	No	Yes	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	3.51	14.50	24.22	8.48	6.49	5.35	5.19	26.10	4.50	11.30	22.48	2.95



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50th-Percentile Queue Length [ft]	87.66	362.52	605.55	211.95	162.32	133.75	129.82	652.53	112.50	282.38	561.91	73.78
95th-Percentile Queue Length [veh]	6.31	21.70	34.57	13.62	10.67	9.14	8.93	37.65	7.98	17.66	31.27	5.31
95th-Percentile Queue Length [ft]	157.79	542.54	864.29	340.48	266.79	228.58	223.25	941.19	199.47	441.45	781.63	132.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	64.45	105.12	104.51	86.41	37.99	28.87	82.81	97.35	19.35	101.87	52.01	10.07
Movement LOS	E	F	F	F	D	C	F	F	B	F	F	B
Critical Movement	No	Yes	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	101.70			51.46			87.85			57.64		
Approach LOS	F			D			F			E		
d_I, Intersection Delay [s/veh]	72.57											
Intersection LOS	E											
Intersection V/C	1.039											

## Option 1: Copy of Grove Ave / Eucalyptus Ave

Number	33											
Intersection	Grove Ave / Eucalyptus Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	30	205	2	3	149	23	12	3	10	1	8	2
Total Analysis Volume [veh/h]	44	259	2	256	302	24	13	128	15	35	87	45

## Intersection Settings

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	38	0	0	38	0	0	22	0	0	22	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

## Lane Group Calculations

g / C, Green / Cycle	0.73	0.73	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.20	0.44	0.09	0.11
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1557	1321	1646	1554
c, Capacity [veh/h]	1202	1048	283	278
X, volume / capacity	0.25	0.56	0.55	0.60
d, Delay for Lane Group [s/veh]	3.23	5.75	26.64	27.32
Lane Group LOS	A	A	C	C
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	0.62	1.69	2.05	2.24

50th-Percentile Queue Length [ft]	15.38	42.18	51.25	55.93
95th-Percentile Queue Length [veh]	1.11	3.04	3.69	4.03
95th-Percentile Queue Length [ft]	27.68	75.92	92.25	100.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	3.23	3.23	3.23	5.75	5.75	5.75	26.64	26.64	26.64	27.32	27.32	27.32
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No	Yes	No
d_A, Approach Delay [s/veh]	3.23			5.75			26.64			27.32		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	10.78											
Intersection LOS	B											
Intersection V/C	0.548											

Option 1: Copy of Grove Ave / Eucalyptus Ave

Number	33											
Intersection	Grove Ave / Eucalyptus Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	2	208	0	3	197	8	27	0	21	1	3	5
Total Analysis Volume [veh/h]	5	359	32	58	269	8	28	107	23	33	169	168

**Intersection Settings**

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	26	0	0	26	0	0	34	0	0	34	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.58	0.58	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.24	0.22	0.11	0.24
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900
Arrival type	3	3	3	3
s, saturation flow rate [veh/h]	1650	1519	1500	1522
c, Capacity [veh/h]	1019	952	489	490
X, volume / capacity	0.39	0.35	0.32	0.75
d, Delay for Lane Group [s/veh]	8.05	7.62	17.63	22.89
Lane Group LOS	A	A	B	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	2.20	1.79	1.57	4.56

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50th-Percentile Queue Length [ft]	55.07	44.71	39.34	114.02
95th-Percentile Queue Length [veh]	3.97	3.22	2.83	8.06
95th-Percentile Queue Length [ft]	99.13	80.48	70.81	201.59

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	8.05	8.05	8.05	7.62	7.62	7.62	17.63	17.63	17.63	22.89	22.89	22.89
Movement LOS	A	A	A	A	A	A	B	B	B	C	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	No	Yes	No
d_A, Approach Delay [s/veh]	8.05			7.62			17.63			22.89		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	13.50											
Intersection LOS	B											
Intersection V/C	0.483											

Option 1: Copy of Grove Ave / Merill Ave

Number	36											
Intersection	Grove Ave / Merill Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name				Grove Ave			Merill Ave			Merill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	71	0	84	52	119	0	0	379	177
Total Analysis Volume [veh/h]	0	6	0	226	14	116	66	1402	0	0	772	226

**Intersection Settings**

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Fixed time											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	0	35	0	0	35	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.36	0.36	0.50	0.50	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.00	0.30	0.13	0.42	0.42	0.32	0.32
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900
Arrival type	3	3	3			3	
s, saturation flow rate [veh/h]	1487	1188	506	1676	1676	1676	1403
c, Capacity [veh/h]	590	522	246	844	844	904	706
X, volume / capacity	0.01	0.68	0.27	0.83	0.83	0.60	0.64
d, Delay for Lane Group [s/veh]	12.50	24.67	22.16	22.05	22.05	13.90	15.44
Lane Group LOS	B	C	C	C	C	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.05	4.76	0.88	8.14	8.14	4.71	4.20

50th-Percentile Queue Length [ft]	1.24	119.03	21.99	203.45	203.45	117.83	105.07
95th-Percentile Queue Length [veh]	0.09	8.34	1.58	12.82	12.82	8.27	7.56
95th-Percentile Queue Length [ft]	2.23	208.50	39.58	320.41	320.41	206.84	189.12

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	12.50	12.50	12.50	24.67	24.67	24.67	22.16	22.05	22.05	13.90	14.36	15.44
Movement LOS	B	B	B	C	C	C	C	C	C	B	B	B
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	12.50			24.67			22.05			14.60		
Approach LOS	B			C			C			B		
d_I, Intersection Delay [s/veh]	19.73											
Intersection LOS	B											
Intersection V/C	0.718											

Option 1: Copy of Grove Ave / Merill Ave

Number	36											
Intersection	Grove Ave / Merill Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name				Grove Ave			Merill Ave			Merill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	145	0	75	106	350	0	0	100	96
Total Analysis Volume [veh/h]	0	13	0	203	9	103	143	852	0	0	1456	234

Intersection Settings

Cycle Length [s]	70											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Fixed time											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	20	0	0	20	0	0	50	0	0	50	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.23	0.23	0.65	0.65	0.65	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.01	0.26	0.55	0.25	0.25	0.53	0.55
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900
Arrival type	3	3	3			3	
s, saturation flow rate [veh/h]	1396	1191	261	1676	1676	1676	1450
c, Capacity [veh/h]	379	364	155	1083	1083	1134	936
X, volume / capacity	0.03	0.87	0.92	0.39	0.39	0.79	0.85
d, Delay for Lane Group [s/veh]	20.87	50.79	86.01	6.96	6.96	15.03	19.23
Lane Group LOS	C	D	F	A	A	B	B
Critical Lane Group	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.17	7.29	4.62	2.35	2.35	8.58	8.72



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50th-Percentile Queue Length [ft]	4.23	182.13	115.42	58.78	58.78	214.47	218.11
95th-Percentile Queue Length [veh]	0.30	11.71	8.14	4.23	4.23	13.38	13.57
95th-Percentile Queue Length [ft]	7.62	292.79	203.52	105.81	105.81	334.56	339.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	20.87	20.87	20.87	50.79	50.79	50.79	86.01	6.96	6.96	15.03	16.65	19.23
Movement LOS	C	C	C	D	D	D	F	A	A	B	B	B
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	20.87			50.79			18.32			17.00		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	20.99											
Intersection LOS	C											
Intersection V/C	0.813											

## Option 1: Copy of Carpenter Ave / Merrill Ave

Number	37											
Intersection	Carpenter Ave / Merrill Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	22	1	5	4	0	0	0	179	22	14	490	6
Total Analysis Volume [veh/h]	60	1	98	22	0	17	54	598	113	264	914	56

## Intersection Settings

Cycle Length [s]	120											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Fixed time											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	22	0	0	22	0	0	98	0	0	98	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

## Lane Group Calculations

g / C, Green / Cycle	0.15	0.15	0.15	0.78	0.78	0.78	0.78
(v / s)_i Volume / Saturation Flow Rate	0.11	0.02	0.01	0.52	0.40	0.29	0.29
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900
Arrival type	3	3	3	3	3	3	3
s, saturation flow rate [veh/h]	1384	1162	1425	1476	662	1676	1643
c, Capacity [veh/h]	244	93	209	1179	438	1302	1276
X, volume / capacity	0.65	0.24	0.08	0.65	0.60	0.38	0.38
d, Delay for Lane Group [s/veh]	61.88	63.61	44.98	8.40	24.32	5.06	5.08
Lane Group LOS	E	E	D	A	C	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	5.37	0.80	0.48	6.82	5.54	3.14	3.09

50th-Percentile Queue Length [ft]	134.14	20.09	11.90	170.42	138.39	78.51	77.24
95th-Percentile Queue Length [veh]	9.16	1.45	0.86	11.10	9.39	5.65	5.56
95th-Percentile Queue Length [ft]	229.12	36.16	21.43	277.46	234.86	141.32	139.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	61.88	61.88	61.88	63.61	44.98	44.98	8.40	8.40	8.40	24.32	5.07	5.08
Movement LOS	E	E	E	E	D	D	A	A	A	C	A	A
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	61.88			55.49			8.40			9.19		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	13.55											
Intersection LOS	B											
Intersection V/C	0.633											

Option 1: Copy of Carpenter Ave / Merrill Ave

Number	37											
Intersection	Carpenter Ave / Merrill Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	25	1	15	6	1	0	2	552	8	1	165	4
Total Analysis Volume [veh/h]	125	1	260	54	1	47	25	1048	55	120	593	25

Intersection Settings

Cycle Length [s]	70											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	21	0	0	49	0	0	49	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.24	0.24	0.24	0.63	0.63	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.28	0.05	0.03	0.69	0.26	0.19	0.19
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900
Arrival type	3	3	3	3	3	3	3
s, saturation flow rate [veh/h]	1366	1002	1429	1641	458	1676	1653
c, Capacity [veh/h]	392	116	339	1089	103	1059	1044
X, volume / capacity	0.98	0.47	0.14	1.04	1.17	0.29	0.29
d, Delay for Lane Group [s/veh]	50.74	37.81	21.27	50.79	174.80	6.54	6.56
Lane Group LOS	D	D	C	F	F	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	8.67	0.96	0.59	23.32	5.66	1.67	1.65

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50th-Percentile Queue Length [ft]	216.63	24.08	14.72	582.94	141.47	41.75	41.28
95th-Percentile Queue Length [veh]	13.49	1.73	1.06	32.17	10.19	3.01	2.97
95th-Percentile Queue Length [ft]	337.32	43.35	26.49	804.34	254.65	75.15	74.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	50.74	50.74	50.74	37.81	21.27	21.27	50.79	50.79	50.79	174.80	6.55	6.56
Movement LOS	D	D	D	D	C	C	D	D	D	F	A	A
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	50.74			30.02			50.79			33.91		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	44.59											
Intersection LOS	D											
Intersection V/C	0.970											

## Option 1: Copy of I-15 SB Ramp / Limonite Ave

Number	41					
Intersection	I-15 SB Ramp / Limonite Ave					
Control Type	Signalized					
Analysis Method	HCM 2010					
Name	Ramp		Limonite Ave		Limonite Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐				⇐	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Base Volume Input [veh/h]	152	393	0	994	578	586
Total Analysis Volume [veh/h]	160	2941	0	1800	2245	586

## Intersection Settings

Cycle Length [s]	60					
Coordination Type	Time of Day Pattern Coordinated					
Actuation Type	Semi-actuated					
Lost time [s]	0.00					
Control Type	Permissive	Unsignalized	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.8	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	64	0	0	60	60	0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

## Lane Group Calculations

g / C, Green / Cycle	0.00	0.94	0.94	0.94
(v / s)_i Volume / Saturation Flow Rate	3.41	0.39	0.49	0.41
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900
Arrival type	3	3	3	
s, saturation flow rate [veh/h]	47	4567	4567	1425
c, Capacity [veh/h]	120	4277	4277	1335
X, volume / capacity	1.33	0.42	0.52	0.44
d, Delay for Lane Group [s/veh]	225.93	0.50	0.70	1.26
Lane Group LOS	F	A	A	A
Critical Lane Group	No	No	Yes	No
50th-Percentile Queue Length [veh]	4.27	0.12	0.18	0.39

50th-Percentile Queue Length [ft]	106.64	3.02	4.59	9.74
95th-Percentile Queue Length [veh]	7.65	0.22	0.33	0.70
95th-Percentile Queue Length [ft]	191.32	5.44	8.27	17.54

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	225.93	0.00	0.00	0.50	0.70	1.26
Movement LOS	F			A	A	A
Critical Movement	Yes	No		No	No	No
d_A, Approach Delay [s/veh]	225.93		0.50		0.82	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]			8.22			
Intersection LOS			A			
Intersection V/C			0.492			

Option 1: Copy of I-15 SB Ramp / Limonite Ave

Number	41					
Intersection	I-15 SB Ramp / Limonite Ave					
Control Type	Signalized					
Analysis Method	HCM 2010					
Name	Ramp		Limonite Ave		Limonite Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐				⇐	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Base Volume Input [veh/h]	170	586	0	1006	917	416
Total Analysis Volume [veh/h]	179	1008	0	2498	2049	416

Intersection Settings

Cycle Length [s]	90					
Coordination Type	Time of Day Pattern Coordinated					
Actuation Type	Semi-actuated					
Lost time [s]	0.00					
Control Type	Permissive	Unsignalized	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.4	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	48	0	0	42	42	0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

g / C, Green / Cycle	0.08	0.81	0.81	0.81
(v / s)_i Volume / Saturation Flow Rate	0.06	0.55	0.45	0.29
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900
Arrival type	3	3	3	
s, saturation flow rate [veh/h]	3101	4567	4567	1425
c, Capacity [veh/h]	264	3711	3711	1158
X, volume / capacity	0.68	0.67	0.55	0.36
d, Delay for Lane Group [s/veh]	43.03	4.48	3.46	3.10
Lane Group LOS	D	A	A	A
Critical Lane Group	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.97	2.76	1.84	1.05






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50th-Percentile Queue Length [ft]	49.25	69.04	45.91	26.33
95th-Percentile Queue Length [veh]	3.55	4.97	3.31	1.90
95th-Percentile Queue Length [ft]	88.65	124.28	82.64	47.39

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.03	0.00	0.00	4.48	3.46	3.10
Movement LOS	D			A	A	A
Critical Movement	Yes	No		No	No	No
d_A, Approach Delay [s/veh]	43.03		4.48		3.40	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]			5.30			
Intersection LOS			A			
Intersection V/C			0.605			

## Option 1: Copy of I-15 NB Ramp / Limonite Ave

Number	42					
Intersection	I-15 NB Ramp / Limonite Ave					
Control Type	Signalized					
Analysis Method	HCM 2010					
Name	Ramp		Limonite Ave		Limonite Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	208	295	441	1088	0	915
Total Analysis Volume [veh/h]	1325	311	728	1088	0	1494

## Intersection Settings

Cycle Length [s]	60					
Coordination Type	Time of Day Pattern Coordinated					
Actuation Type	Semi-actuated					
Lost time [s]	0.00					
Control Type	Permissive	Unsignalized	Permissive	Unsignalized	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.4	0.0	4.8	0.0	0.0	4.8
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	32	0	28	0	0	28
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

## Lane Group Calculations

g / C, Green / Cycle	0.45	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.43	0.16	0.33
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900
Arrival type	3	3	3
s, saturation flow rate [veh/h]	3101	4567	4567
c, Capacity [veh/h]	1405	1797	1797
X, volume / capacity	0.94	0.41	0.83
d, Delay for Lane Group [s/veh]	19.64	13.81	21.05
Lane Group LOS	B	B	C
Critical Lane Group	Yes	No	Yes
50th-Percentile Queue Length [veh]	7.47	2.07	5.78

50th-Percentile Queue Length [ft]	186.70	51.63	144.45
95th-Percentile Queue Length [veh]	11.95	3.72	9.72
95th-Percentile Queue Length [ft]	298.74	92.93	243.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	19.64	0.00	13.81	0.00	0.00	21.05
Movement LOS	B		B			C
Critical Movement	No	No	No	No		Yes
d_A, Approach Delay [s/veh]	19.64		13.81			21.05
Approach LOS	B		B			C
d_I, Intersection Delay [s/veh]			19.04			
Intersection LOS			B			
Intersection V/C			0.754			

Option 1: Copy of I-15 NB Ramp / Limonite Ave

Number	42					
Intersection	I-15 NB Ramp / Limonite Ave					
Control Type	Signalized					
Analysis Method	HCM 2010					
Name	Ramp		Limonite Ave		Limonite Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	356	612	816	1319	0	958
Total Analysis Volume [veh/h]	912	644	1299	1319	0	1555

**Intersection Settings**

Cycle Length [s]	60					
Coordination Type	Time of Day Pattern Coordinated					
Actuation Type	Semi-actuated					
Lost time [s]	0.00					
Control Type	Permissive	Unsignalized	Permissive	Unsignalized	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.4	0.0	4.8	0.0	0.0	4.8
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	39	0	21	0	0	21
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

**Lane Group Calculations**

g / C, Green / Cycle	0.35	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.29	0.28	0.34
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900
Arrival type	3	3	3
s, saturation flow rate [veh/h]	3101	4567	4567
c, Capacity [veh/h]	1090	2261	2261
X, volume / capacity	0.84	0.57	0.69
d, Delay for Lane Group [s/veh]	19.65	11.76	13.33
Lane Group LOS	B	B	B
Critical Lane Group	Yes	No	Yes
50th-Percentile Queue Length [veh]	5.11	3.28	4.34

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50th-Percentile Queue Length [ft]	127.72	82.09	108.42
95th-Percentile Queue Length [veh]	8.82	5.91	7.75
95th-Percentile Queue Length [ft]	220.39	147.77	193.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	19.65	0.00	11.76	0.00	0.00	13.33
Movement LOS	B		B			B
Critical Movement	Yes	No	No	No		No
d_A, Approach Delay [s/veh]	19.65		11.76			13.33
Approach LOS	B		B			B
d_I, Intersection Delay [s/veh]			14.32			
Intersection LOS			B			
Intersection V/C			0.635			

Option 1: Copy of Archibald Ave / Eucalyptus Ave

Number	66											
Intersection	Archibald Ave / Eucalyptus Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Archibald Ave			Archibald Ave			Eucalyptus			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	1326	27	14	650	0	0	0	0	10	0	50
Total Analysis Volume [veh/h]	322	2486	52	107	2252	373	118	57	317	144	35	145

**Intersection Settings**

Cycle Length [s]	80											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	0.0	4.8	3.6	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	47	0	10	46	0	0	23	11	0	23	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.11	0.56	0.56	0.10	0.55	0.55	0.26	0.26	0.26	0.26		
(v / s)_i Volume / Saturation Flow Rate	0.10	0.52	0.53	0.07	0.54	0.57	0.11	0.03	0.22	0.24		
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3101	3192	1659	1597	3192	1561	1079	1676	1425	1327		
c, Capacity [veh/h]	349	1796	933	160	1756	859	127	440	374	413		
X, volume / capacity	0.92	0.93	0.94	0.67	0.99	1.04	0.93	0.13	0.85	0.78		
d, Delay for Lane Group [s/veh]	45.47	25.81	33.70	39.52	36.16	59.74	62.97	22.65	35.32	34.61		
Lane Group LOS	D	C	C	D	D	F	E	C	D	C		
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes		
50th-Percentile Queue Length [veh]	3.44	13.55	16.32	2.12	17.11	22.67	3.05	0.79	6.08	6.26		

50th-Percentile Queue Length [ft]	86.08	338.74	408.08	53.09	427.63	566.78	76.32	19.65	152.10	156.61
95th-Percentile Queue Length [veh]	6.20	19.59	22.95	3.82	23.89	31.46	5.49	1.42	10.13	10.37
95th-Percentile Queue Length [ft]	154.94	489.66	573.73	95.56	597.19	786.46	137.37	35.38	253.23	259.23

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	45.47	28.42	33.70	39.52	41.61	59.74	62.97	22.65	35.32	34.61	34.61	34.61
Movement LOS	D	C	C	D	D	E	E	C	D	C	C	C
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	30.43			44.00			40.49			34.61		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	37.20											
Intersection LOS	D											
Intersection V/C	0.920											

Option 1: Copy of Archibald Ave/Eucalyptus Ave

Number	66											
Intersection	Archibald Ave/Eucalyptus Ave											
Control Type	Signalized											
Analysis Method	HCM 2010											
Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	868	30	47	1093	0	0	0	0	2	0	22
Total Analysis Volume [veh/h]	399	2604	74	162	2522	111	269	55	438	29	63	133

Intersection Settings

Cycle Length [s]	90											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	13	50	0	11	48	0	0	29	0	0	29	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.12	0.53	0.53	0.10	0.51	0.51	0.30	0.30	0.30	0.30		
(v / s)_i Volume / Saturation Flow Rate	0.13	0.55	0.56	0.10	0.54	0.55	0.25	0.03	0.31	0.15		
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3101	3192	1653	1597	3192	1641	1064	1676	1425	1480		
c, Capacity [veh/h]	379	1702	882	160	1631	839	266	503	428	489		
X, volume / capacity	1.05	1.03	1.05	1.01	1.06	1.08	1.01	0.11	1.02	0.46		
d, Delay for Lane Group [s/veh]	76.44	51.31	64.03	77.30	61.92	76.47	83.10	22.89	76.51	26.56		
Lane Group LOS	F	F	F	F	F	F	F	C	F	C		
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No		
50th-Percentile Queue Length [veh]	5.86	21.53	25.41	4.95	23.11	27.15	8.99	0.82	13.99	3.83		



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50th-Percentile Queue Length [ft]	146.57	538.22	635.32	123.77	577.74	678.80	224.65	20.47	349.86	95.82
95th-Percentile Queue Length [veh]	10.03	29.86	34.91	8.65	32.40	37.84	13.99	1.47	20.43	6.90
95th-Percentile Queue Length [ft]	250.81	746.44	872.66	216.13	809.89	945.88	349.79	36.84	510.86	172.47

**Movement, Approach, & Intersection Results**





d_M, Delay for Movement [s/veh]	76.44	55.45	64.03	77.30	66.50	76.47	83.10	22.89	76.51	26.56	26.56	26.56
Movement LOS	F	F	E	F	F	E	F	C	F	C	C	C
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	58.38			67.52			74.97			26.56		
Approach LOS	E			E			E			C		
d_I, Intersection Delay [s/veh]	62.90											
Intersection LOS	E											
Intersection V/C	0.987											

**HORIZON YEAR 2040 NO PROJECT AM/PM PEAK HOUR**

**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	138	883	163	56	862	98	109	313	128	179	437	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.20	1.20	1.20	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	29	0	0	62	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	1089	196	67	1096	118	109	313	128	179	437	92
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	287	52	18	288	31	29	82	34	47	115	24
Total Analysis Volume [veh/h]	175	1146	206	71	1154	124	115	329	135	188	460	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	34	0	61	23	0	10	23	0	13	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	9	40	40	0	29	29	26	15	15	10	18	18
g / C, Green / Cycle	0.13	0.57	0.57	0.00	0.41	0.41	0.37	0.21	0.21	0.15	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.11	0.29	0.29	0.53	0.26	0.26	0.11	0.14	0.15	0.13	0.16	0.16
s, saturation flow rate [veh/h]	1597	3192	1549	134	3192	1660	1003	1676	1514	1398	1744	1640
c, Capacity [veh/h]	205	1818	882	103	1317	685	392	359	324	299	439	413
d1, Uniform Delay [s]	29.85	9.07	9.07	35.00	16.40	16.40	18.02	25.28	25.35	18.14	23.46	23.47
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.57	0.99	2.03	31.76	2.38	4.52	0.41	2.22	2.57	2.18	1.65	1.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.85	0.50	0.50	0.69	0.64	0.64	0.29	0.67	0.69	0.63	0.65	0.66
d, Delay for Lane Group [s/veh]	39.42	10.06	11.10	66.76	18.78	20.92	18.43	27.49	27.92	20.32	25.11	25.25
Lane Group LOS	D	B	B	E	B	C	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	3.22	3.45	3.60	2.29	5.04	5.66	1.26	3.60	3.34	2.27	4.05	3.83
50th-Percentile Queue Length [ft]	80.50	86.18	90.03	57.20	126.11	141.42	31.49	90.07	83.58	56.74	101.20	95.87
95th-Percentile Queue Length [veh]	5.80	6.21	6.48	4.12	8.73	9.56	2.27	6.48	6.02	4.09	7.29	6.90
95th-Percentile Queue Length [ft]	144.90	155.13	162.05	102.96	218.19	238.94	56.67	162.12	150.45	102.13	182.16	172.57

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.42	10.27	11.10	66.76	19.36	20.92	18.43	27.61	27.92	20.32	25.16	25.25
Movement LOS	D	B	B	E	B	C	B	C	C	C	C	C
d_A, Approach Delay [s/veh]	13.72			22.00			25.86			23.95		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	19.87											
Intersection LOS	B											
Intersection V/C	0.612											

**Sequence**

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.582

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	188	915	188	77	671	80	136	209	247	76	144	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.28	1.28	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	78	0	0	58	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	241	1249	241	99	917	102	136	209	247	76	144	80
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	329	63	26	241	27	36	55	65	20	38	21
Total Analysis Volume [veh/h]	254	1315	254	104	965	107	143	220	260	80	152	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	29	0	11	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	9	33	33	7	30	30	24	17	17	24	15	15
g / C, Green / Cycle	0.13	0.47	0.47	0.09	0.44	0.44	0.35	0.24	0.24	0.35	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.08	0.33	0.33	0.03	0.22	0.22	0.12	0.13	0.18	0.08	0.07	0.08
s, saturation flow rate [veh/h]	3101	3192	1542	3101	3192	1592	1212	1676	1482	1041	1676	1547
c, Capacity [veh/h]	403	1501	725	291	1386	692	487	396	350	358	371	342
d1, Uniform Delay [s]	28.85	14.67	14.71	29.73	14.43	14.44	18.92	23.50	24.76	18.99	22.85	22.95
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.63	2.79	5.74	0.74	1.37	2.75	0.33	1.22	3.12	0.31	0.50	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

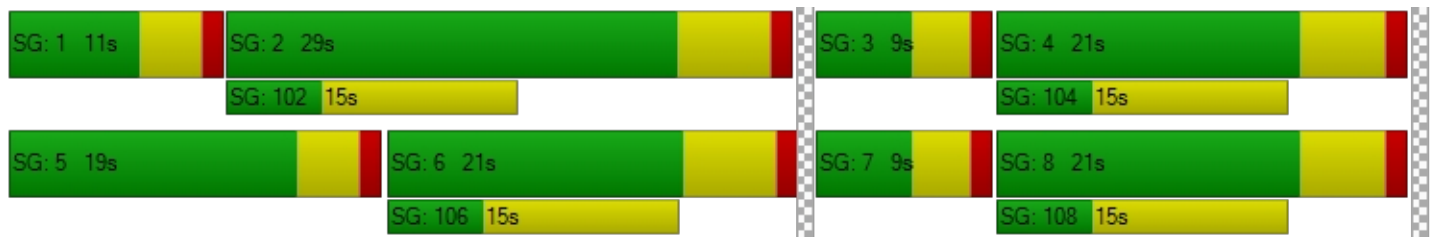
X, volume / capacity	0.63	0.70	0.71	0.36	0.52	0.52	0.29	0.56	0.74	0.22	0.32	0.34
d, Delay for Lane Group [s/veh]	30.48	17.46	20.45	30.47	15.80	17.19	19.25	24.72	27.89	19.30	23.35	23.53
Lane Group LOS	C	B	C	C	B	B	B	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.94	5.89	6.32	0.79	3.68	3.94	1.65	3.05	3.93	0.89	1.57	1.54
50th-Percentile Queue Length [ft]	48.49	147.22	158.05	19.66	92.03	98.62	41.37	76.25	98.36	22.36	39.31	38.52
95th-Percentile Queue Length [veh]	3.49	9.87	10.45	1.42	6.63	7.10	2.98	5.49	7.08	1.61	2.83	2.77
95th-Percentile Queue Length [ft]	87.28	246.71	261.14	35.38	165.66	177.52	74.47	137.25	177.05	40.24	70.75	69.34

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.48	18.05	20.45	30.47	16.16	17.19	19.25	24.72	27.89	19.30	23.39	23.53
Movement LOS	C	B	C	C	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	20.11			17.52			24.79			22.39		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	20.26											
Intersection LOS	C											
Intersection V/C	0.582											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.351

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Lane Configuration	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Turning Movement												
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	372	670	219	34	212	27	23	117	84	71	254	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	7	440	0	0	231	14	0	0	10	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	360	1077	208	32	432	40	23	117	94	71	254	40
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	283	55	8	114	11	6	31	25	19	67	11
Total Analysis Volume [veh/h]	379	1134	219	34	455	42	24	123	99	75	267	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	24	10	10	21	15	15	26	13	10	21	10
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	11	42	51	5	36	42	4	9	22	6	11	17
g / C, Green / Cycle	0.16	0.61	0.72	0.07	0.52	0.60	0.06	0.13	0.31	0.09	0.15	0.25
(v / s)_i Volume / Saturation Flow Rate	0.12	0.25	0.15	0.01	0.10	0.03	0.01	0.04	0.07	0.02	0.08	0.03
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	487	2769	984	205	2354	814	182	402	399	271	494	311
d1, Uniform Delay [s]	28.33	7.22	3.95	30.86	9.13	6.63	31.26	27.82	19.49	29.88	27.30	22.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.72	0.45	0.52	0.38	0.18	0.03	0.33	0.43	0.32	0.55	0.92	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

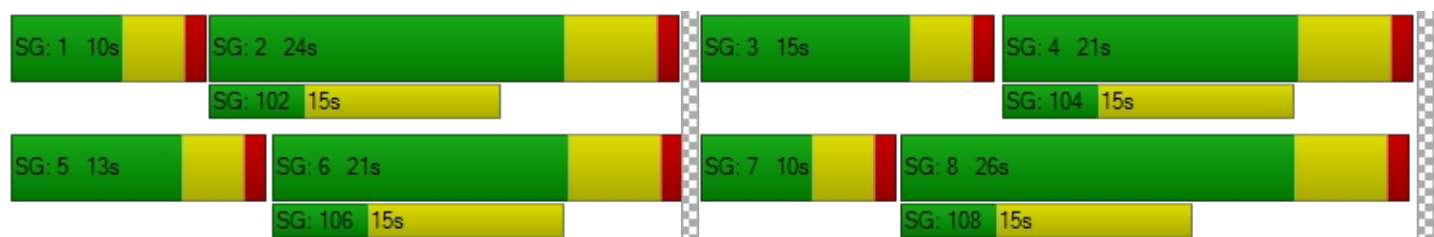
X, volume / capacity	0.78	0.41	0.22	0.17	0.19	0.05	0.13	0.31	0.25	0.28	0.54	0.14
d, Delay for Lane Group [s/veh]	31.05	7.67	4.48	31.24	9.31	6.66	31.59	28.24	19.81	30.42	28.22	22.25
Lane Group LOS	C	A	A	C	A	A	C	C	B	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.00	2.28	0.83	0.27	1.06	0.22	0.19	0.90	1.17	0.57	1.97	0.53
50th-Percentile Queue Length [ft]	75.04	56.96	20.83	6.64	26.57	5.55	4.73	22.44	29.25	14.37	49.33	13.27
95th-Percentile Queue Length [veh]	5.40	4.10	1.50	0.48	1.91	0.40	0.34	1.62	2.11	1.03	3.55	0.96
95th-Percentile Queue Length [ft]	135.08	102.53	37.50	11.95	47.82	9.99	8.52	40.40	52.65	25.86	88.79	23.89

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.05	7.67	4.48	31.24	9.31	6.66	31.59	28.24	19.81	30.42	28.22	22.25
Movement LOS	C	A	A	C	A	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	12.38			10.51			25.18			28.00		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.20											
Intersection LOS	B											
Intersection V/C	0.351											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.821

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐			⇐						⇐⇑⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	279	831	0	0	803	454	0	0	0	450	0	398
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.20	1.20	1.00	1.00	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	85	31	0	0	74	0	0	0	0	270	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	420	1028	0	0	1038	545	0	0	0	720	0	398
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	271	0	0	273	143	0	0	0	189	0	105
Total Analysis Volume [veh/h]	442	1082	0	0	1093	574	0	0	0	758	0	419
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	0	4	0
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	11	40	0	0	29	0	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	0	10	0
Rest In Walk		No			No							No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	No			No							No	
Pedestrian Recall	No	No			No							No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	C		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	9	38	27	27		18	18	18
g / C, Green / Cycle	0.15	0.63	0.45	0.45		0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.14	0.24	0.34	0.40		0.25	0.25	0.28
s, saturation flow rate [veh/h]	3101	4567	3192	1425		1597	1584	1425
c, Capacity [veh/h]	465	2892	1436	641		479	475	428
d1, Uniform Delay [s]	25.28	5.29	13.80	15.20		19.49	19.54	20.28
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	10.79	0.37	3.85	17.48		3.52	3.71	9.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

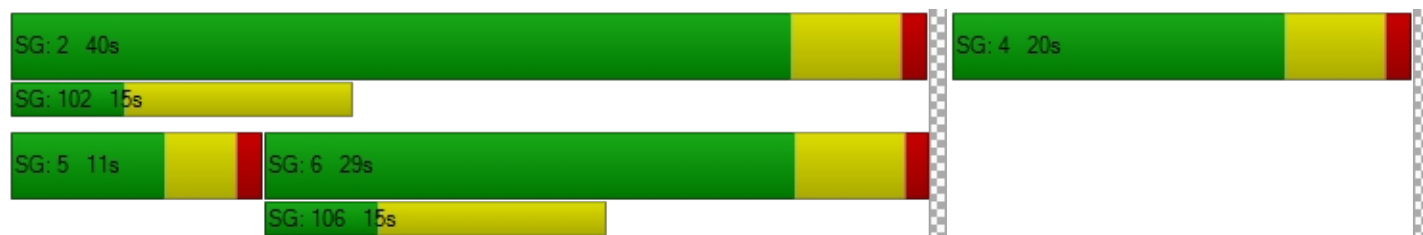
X, volume / capacity	0.95	0.37	0.76	0.90		0.82	0.83	0.92
d, Delay for Lane Group [s/veh]	36.07	5.66	17.65	32.68		23.01	23.25	29.39
Lane Group LOS	D	A	B	C		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	3.49	1.41	5.61	8.72		4.80	4.83	5.59
50th-Percentile Queue Length [ft]	87.20	35.26	140.31	217.92		120.03	120.82	139.76
95th-Percentile Queue Length [veh]	6.28	2.54	9.50	13.56		8.39	8.44	9.47
95th-Percentile Queue Length [ft]	156.96	63.47	237.45	338.96		209.86	210.95	236.70

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	36.07	5.66	0.00	0.00	17.65	32.68	0.00	0.00	0.00	23.13	23.25	29.00
Movement LOS	D	A			B	C				C	C	C
d_A, Approach Delay [s/veh]	14.48		22.83			0.00			25.22			
Approach LOS	B		C			A			C			
d_I, Intersection Delay [s/veh]	20.56											
Intersection LOS	C											
Intersection V/C	0.821											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	39.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.994

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T			TT			T+					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	715	478	273	957	0	390	2	278	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.20	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	117	48	0	343	0	0	0	317	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	975	622	328	1491	0	390	2	595	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	257	164	86	392	0	103	1	157	0	0	0
Total Analysis Volume [veh/h]	0	1026	655	345	1569	0	411	2	626	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	30	0	10	40	0	0	30	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	28	28	8	38	28	28	
g / C, Green / Cycle	0.40	0.40	0.11	0.54	0.40	0.40	
(v / s)_i Volume / Saturation Flow Rate	0.32	0.44	0.11	0.34	0.26	0.44	
s, saturation flow rate [veh/h]	3192	1482	3101	4567	1597	1426	
c, Capacity [veh/h]	1277	593	354	2479	639	570	
d1, Uniform Delay [s]	18.57	21.00	30.89	11.14	16.97	21.00	
k, delay calibration	0.50	0.50	0.11	0.50	0.16	0.47	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.43	69.07	16.77	1.24	1.59	67.43	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

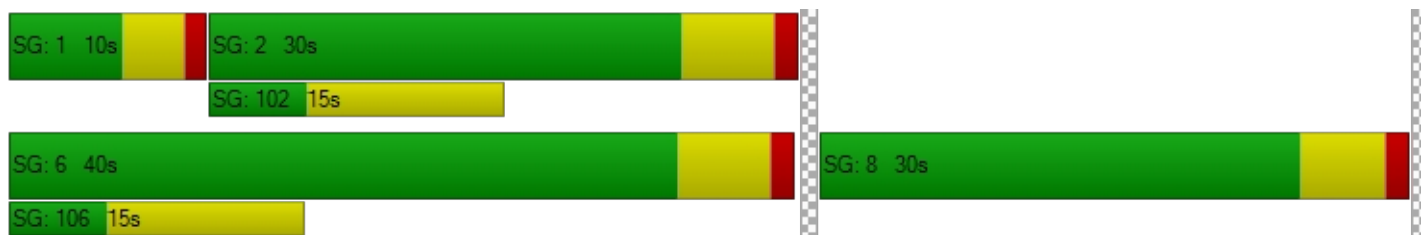
X, volume / capacity	0.80	1.10	0.97	0.63	0.64	1.10	
d, Delay for Lane Group [s/veh]	24.00	90.07	47.67	12.39	18.55	88.43	
Lane Group LOS	C	F	D	B	B	F	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	7.26	19.60	3.52	4.71	4.89	18.60	
50th-Percentile Queue Length [ft]	181.50	490.08	88.01	117.70	122.28	464.93	
95th-Percentile Queue Length [veh]	11.68	28.72	6.34	8.27	8.52	27.37	
95th-Percentile Queue Length [ft]	291.98	717.93	158.42	206.66	212.96	684.29	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	24.00	90.07	47.67	12.39	0.00	18.55	88.43	88.43	0.00	0.00	0.00
Movement LOS		C	F	D	B		B	F	F			
d_A, Approach Delay [s/veh]	49.75			18.75			60.79			0.00		
Approach LOS	D			B			E			A		
d_I, Intersection Delay [s/veh]	39.42											
Intersection LOS	D											
Intersection V/C	0.994											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.951

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	199	981	0	0	604	445	0	0	0	182	1	430
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.00	1.00	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	66	78	0	0	58	0	0	0	0	20	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	321	1334	0	0	831	570	0	0	0	202	1	430
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	351	0	0	219	150	0	0	0	53	0	113
Total Analysis Volume [veh/h]	338	1404	0	0	875	600	0	0	0	213	1	453
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	14	40	0	0	26	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	12	38	24	24		18	18
g / C, Green / Cycle	0.20	0.63	0.40	0.40		0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.21	0.44	0.27	0.42		0.13	0.32
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	319	2022	1277	570		479	428
d1, Uniform Delay [s]	24.00	7.20	14.88	18.00		16.97	21.00
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	40.60	2.00	3.01	52.29		0.65	43.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

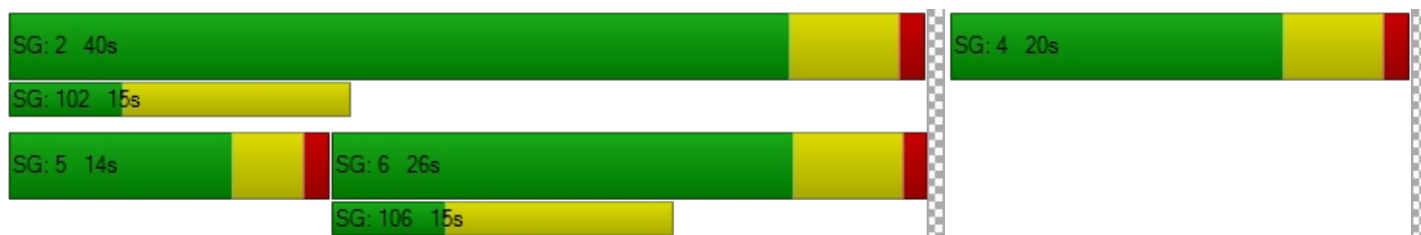
X, volume / capacity	1.06	0.69	0.69	1.05		0.45	1.06
d, Delay for Lane Group [s/veh]	64.60	9.20	17.88	70.29		17.63	64.69
Lane Group LOS	F	A	B	F		B	F
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	7.50	3.75	4.41	14.39		2.15	10.27
50th-Percentile Queue Length [ft]	187.51	93.77	110.29	359.81		53.63	256.87
95th-Percentile Queue Length [veh]	12.32	6.75	7.86	21.33		3.86	16.06
95th-Percentile Queue Length [ft]	308.02	168.79	196.40	533.31		96.53	401.42

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	64.60	9.20	0.00	0.00	17.88	70.29	0.00	0.00	0.00	17.63	17.63	64.69
Movement LOS	F	A			B	F				B	B	F
d_A, Approach Delay [s/veh]	19.95		39.20		0.00		49.59					
Approach LOS	B		D		A		D					
d_I, Intersection Delay [s/veh]	32.35											
Intersection LOS	C											
Intersection V/C	0.951											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	61.8
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.014

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑			← ↑			↑ ↑					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	578	242	251	543	0	597	0	148	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.28	1.28	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	144	37	0	78	0	0	0	36	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	884	347	321	773	0	597	0	184	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	233	91	84	203	0	157	0	48	0	0	0
Total Analysis Volume [veh/h]	0	931	365	338	814	0	628	0	194	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	28	0	15	43	0	0	27	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	26	26	13	41	25	25	
g / C, Green / Cycle	0.37	0.37	0.19	0.59	0.36	0.36	
(v / s)_i Volume / Saturation Flow Rate	0.39	0.41	0.21	0.26	0.39	0.14	
s, saturation flow rate [veh/h]	1676	1586	1597	3192	1597	1425	
c, Capacity [veh/h]	623	589	297	1870	570	509	
d1, Uniform Delay [s]	22.00	22.00	28.50	8.06	22.50	16.74	
k, delay calibration	0.50	0.50	0.11	0.50	0.39	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	47.06	67.46	72.26	0.74	64.53	0.47	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	1.04	1.10	1.14	0.44	1.10	0.38	
d, Delay for Lane Group [s/veh]	69.06	89.46	100.76	8.80	87.03	17.21	
Lane Group LOS	F	F	F	A	F	B	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	16.94	19.36	10.42	2.65	18.35	2.12	
50th-Percentile Queue Length [ft]	423.52	484.11	260.49	66.14	458.71	53.10	
95th-Percentile Queue Length [veh]	24.34	28.29	16.70	4.76	26.99	3.82	
95th-Percentile Queue Length [ft]	608.39	707.32	417.47	119.04	674.80	95.58	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	75.26	89.46	100.76	8.80	0.00	87.03	87.03	17.21	0.00	0.00	0.00
Movement LOS		E	F	F	A		F	F	B			
d_A, Approach Delay [s/veh]	79.26			35.78			70.55			0.00		
Approach LOS	E			D			E			A		
d_I, Intersection Delay [s/veh]	61.75											
Intersection LOS	E											
Intersection V/C	1.014											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.658

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	1	0	0	0	0	0	0	0	1
Pocket Length [ft]	530.00	100.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	476	1012	0	0	279	104	0	0	0	253	2	383
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	233	447	0	0	241	14	0	0	0	162	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	685	1408	0	0	506	113	0	0	0	415	2	383
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	180	371	0	0	133	30	0	0	0	109	1	101
Total Analysis Volume [veh/h]	721	1482	0	0	533	119	0	0	0	437	2	403
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	0	4	0
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	0	5	0
Maximum Green [s]	5	30	0	0	30	0	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	36	0	0	17	0	0	0	0	0	0	24	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	0	10	0
Rest In Walk		No			No							No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	Yes	No			No							No	
Maximum Recall	No	No			No							No	
Pedestrian Recall	No	No			No							No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	17	35	17	17		21	21
g / C, Green / Cycle	0.28	0.59	0.28	0.28		0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.23	0.32	0.14	0.14		0.27	0.28
s, saturation flow rate [veh/h]	3101	4567	3192	1529		1597	1425
c, Capacity [veh/h]	857	2691	892	427		549	490
d1, Uniform Delay [s]	20.46	7.49	18.03	18.16		17.80	18.00
k, delay calibration	0.11	0.50	0.50	0.50		0.12	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	2.32	0.82	1.90	4.28		3.03	4.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.84	0.55	0.49	0.51		0.80	0.82
d, Delay for Lane Group [s/veh]	22.79	8.31	19.93	22.44		20.83	22.24
Lane Group LOS	C	A	B	C		C	C
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	4.38	2.76	2.41	2.70		5.07	4.85
50th-Percentile Queue Length [ft]	109.38	69.02	60.34	67.52		126.66	121.28
95th-Percentile Queue Length [veh]	7.81	4.97	4.34	4.86		8.76	8.46
95th-Percentile Queue Length [ft]	195.14	124.24	108.60	121.54		218.95	211.58

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	22.79	8.31	0.00	0.00	20.40	22.44	0.00	0.00	0.00	20.83	20.83	22.24
Movement LOS	C	A			C	C				C	C	C
d_A, Approach Delay [s/veh]	13.05			20.77			0.00			21.50		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	16.33											
Intersection LOS	B											
Intersection V/C	0.658											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							+ + +					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	1157	337	76	451	0	319	1	295	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	672	181	0	496	0	0	4	234	0	6	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1771	501	72	924	0	319	5	529	0	6	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	466	132	19	243	0	84	1	139	0	2	0
Total Analysis Volume [veh/h]	0	1864	527	76	973	0	336	5	557	0	6	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	27	0	15	42	0	0	18	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	L	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	32	6	40	16	16	16	
g / C, Green / Cycle	0.54	0.10	0.67	0.27	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.41	0.02	0.21	0.19	0.21	0.21	
s, saturation flow rate [veh/h]	4567	3101	4567	1597	1444	1425	
c, Capacity [veh/h]	2447	305	3048	424	384	379	
d1, Uniform Delay [s]	10.92	25.00	4.22	20.00	20.35	20.40	
k, delay calibration	0.50	0.11	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.30	0.42	0.28	2.32	3.33	3.51	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.76	0.25	0.32	0.72	0.77	0.78	
d, Delay for Lane Group [s/veh]	13.23	25.42	4.49	22.32	23.68	23.91	
Lane Group LOS	B	C	A	C	C	C	
Critical Lane Group	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh]	5.12	0.47	0.99	3.64	3.68	3.69	
50th-Percentile Queue Length [ft]	128.11	11.85	24.66	91.02	91.95	92.14	
95th-Percentile Queue Length [veh]	8.84	0.85	1.78	6.55	6.62	6.63	
95th-Percentile Queue Length [ft]	220.93	21.32	44.39	163.83	165.51	165.85	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	13.23	0.00	25.42	4.49	0.00	22.47	23.68	23.80	0.00	0.00	0.00
Movement LOS		B		C	A		C	C	C			
d_A, Approach Delay [s/veh]	13.23			6.01			23.29			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	13.61											
Intersection LOS	B											
Intersection V/C	0.640											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	121	840	54	152	899	47	126	265	93	61	278	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.20	1.20	1.20	1.20	1.20	1.20	1.19	1.19	1.19	1.19	1.19	1.19
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	178	0	0	661	0	0	0	84	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	1186	65	182	1740	56	150	315	195	73	331	217
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	312	17	48	458	15	39	83	51	19	87	57
Total Analysis Volume [veh/h]	153	1248	68	192	1832	59	158	332	205	77	348	228
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	28	28	7	28	28	19	19	19	19	19	19
g / C, Green / Cycle	0.11	0.46	0.46	0.12	0.47	0.47	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.31	0.05	0.07	0.45	0.05	0.24	0.19	0.19	0.11	0.21	0.21
s, saturation flow rate [veh/h]	2750	4050	1264	2750	4050	1264	666	1487	1300	690	1487	1294
c, Capacity [veh/h]	316	1880	587	328	1898	592	201	471	412	215	471	410
d1, Uniform Delay [s]	24.90	12.45	9.11	25.02	15.47	8.89	28.12	17.33	17.37	25.10	17.64	17.70
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.15	1.87	0.40	1.66	13.92	0.34	6.61	1.26	1.48	1.00	1.52	1.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

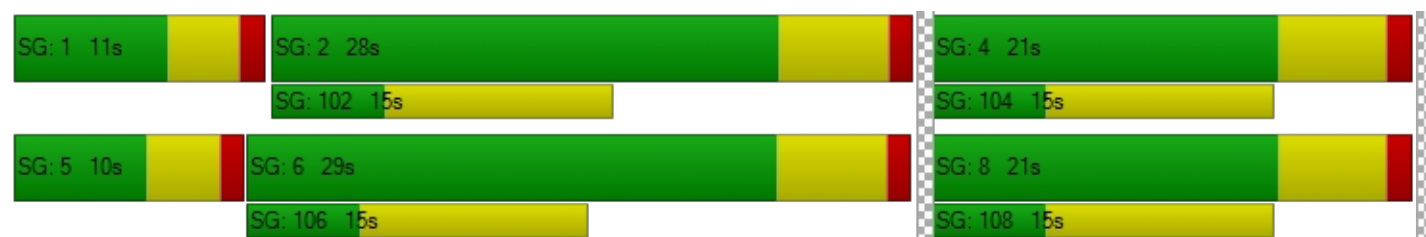
X, volume / capacity	0.48	0.66	0.12	0.59	0.97	0.10	0.79	0.61	0.61	0.36	0.65	0.66
d, Delay for Lane Group [s/veh]	26.05	14.32	9.51	26.68	29.39	9.22	34.72	18.59	18.85	26.10	19.15	19.51
Lane Group LOS	C	B	A	C	C	A	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	0.98	3.68	0.47	1.25	8.59	0.40	2.48	3.00	2.68	1.02	3.30	2.95
50th-Percentile Queue Length [ft]	24.41	92.00	11.66	31.19	214.72	9.90	61.88	75.12	67.10	25.40	82.49	73.85
95th-Percentile Queue Length [veh]	1.76	6.62	0.84	2.25	13.40	0.71	4.46	5.41	4.83	1.83	5.94	5.32
95th-Percentile Queue Length [ft]	43.93	165.60	20.99	56.14	334.88	17.83	111.39	135.21	120.78	45.72	148.49	132.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.05	14.32	9.51	26.68	29.39	9.22	34.72	18.63	18.85	26.10	19.20	19.51
Movement LOS	C	B	A	C	C	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	15.32			28.57			22.35			20.12		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	22.59											
Intersection LOS	C											
Intersection V/C	0.745											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	22.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↱			↵↱			↵↱			↵↱		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	51	423	11	94	380	92	153	207	44	9	181	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.28	1.28	1.28	1.28	1.19	1.19	1.19	1.19	1.19	1.19
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	180	0	0	117	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	721	14	120	603	118	182	246	52	11	215	200
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	190	4	32	159	31	48	65	14	3	57	53
Total Analysis Volume [veh/h]	68	759	15	126	635	124	192	259	55	12	226	211
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	15	26	0	13	24	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	6	28	28	8	30	30	11	23	23	28	15	15
g / C, Green / Cycle	0.08	0.40	0.40	0.12	0.43	0.43	0.16	0.32	0.32	0.40	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.04	0.23	0.23	0.08	0.23	0.23	0.12	0.10	0.10	0.01	0.13	0.15
s, saturation flow rate [veh/h]	1597	1676	1732	1597	1676	1648	1597	1676	1577	1056	1676	1425
c, Capacity [veh/h]	135	668	690	186	721	709	251	541	508	476	358	305
d1, Uniform Delay [s]	30.62	16.39	16.39	29.67	14.73	14.74	28.26	17.77	17.80	15.32	25.01	25.40
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.86	3.51	3.40	4.28	2.79	2.84	4.83	0.30	0.33	0.02	1.83	2.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.50	0.57	0.57	0.68	0.53	0.53	0.77	0.30	0.30	0.03	0.63	0.69
d, Delay for Lane Group [s/veh]	33.49	19.90	19.79	33.95	17.52	17.57	33.09	18.07	18.12	15.34	26.84	28.22
Lane Group LOS	C	B	B	C	B	B	C	B	B	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.12	4.64	4.78	2.09	4.28	4.22	3.19	1.79	1.71	0.12	3.31	3.20
50th-Percentile Queue Length [ft]	27.98	116.11	119.44	52.15	106.94	105.41	79.63	44.80	42.86	2.91	82.65	80.01
95th-Percentile Queue Length [veh]	2.01	8.18	8.36	3.75	7.67	7.58	5.73	3.23	3.09	0.21	5.95	5.76
95th-Percentile Queue Length [ft]	50.36	204.47	209.05	93.86	191.74	189.59	143.33	80.65	77.15	5.24	148.78	144.02

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.49	19.84	19.79	33.95	17.54	17.57	33.09	18.09	18.12	15.34	26.84	28.22
Movement LOS	C	B	B	C	B	B	C	B	B	B	C	C
d_A, Approach Delay [s/veh]	20.94			19.88			23.79			27.18		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	22.17											
Intersection LOS	C											
Intersection V/C	0.574											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	7.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐   ⇐			⇐   ⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	73	1127	11	49	434	11	19	2	13	22	8	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	834	0	0	755	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	1905	10	47	1167	10	19	2	13	22	8	87
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	501	3	12	307	3	5	1	3	6	2	23
Total Analysis Volume [veh/h]	73	2005	11	49	1228	11	20	2	14	23	8	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	10	21	0	0	29	0	0	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	42	42	5	41	41	7	7	7	7
g / C, Green / Cycle	0.10	0.70	0.70	0.08	0.69	0.69	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.41	0.41	0.03	0.25	0.25	0.02	0.01	0.02	0.07
s, saturation flow rate [veh/h]	1597	3192	1672	1597	3192	1669	1161	1510	1252	1442
c, Capacity [veh/h]	153	2241	1174	133	2203	1152	168	173	239	165
d1, Uniform Delay [s]	25.71	4.55	4.55	25.99	3.87	3.87	28.07	23.78	25.05	25.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.31	1.15	2.19	1.68	0.48	0.91	0.31	0.23	0.17	3.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

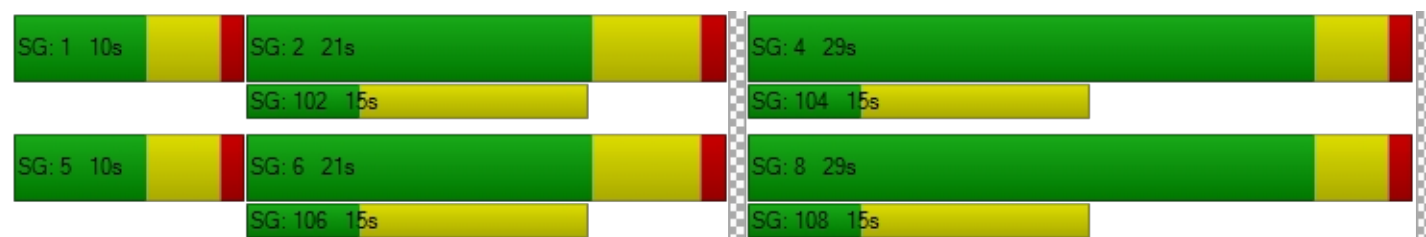
X, volume / capacity	0.48	0.59	0.59	0.37	0.37	0.37	0.12	0.09	0.10	0.61
d, Delay for Lane Group [s/veh]	28.03	5.70	6.73	27.68	4.35	4.78	28.38	24.01	25.22	28.85
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.00	2.17	2.62	0.67	1.13	1.32	0.27	0.20	0.29	1.39
50th-Percentile Queue Length [ft]	24.90	54.34	65.41	16.65	28.35	33.12	6.81	4.90	7.18	34.81
95th-Percentile Queue Length [veh]	1.79	3.91	4.71	1.20	2.04	2.38	0.49	0.35	0.52	2.51
95th-Percentile Queue Length [ft]	44.82	97.81	117.73	29.96	51.02	59.62	12.25	8.82	12.93	62.66

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.03	6.05	6.73	27.68	4.49	4.78	28.38	24.01	24.01	25.22	28.85	28.85
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	6.82			5.38			26.44			28.17		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.24											
Intersection LOS	A											
Intersection V/C	0.515											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	22.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.638

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↵			↵ ↑ ↵			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	52	667	145	140	766	114	110	287	41	139	462	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	0.86	0.86	0.86	0.86	0.86	0.86
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	12	165	0	0	660	1	0	163	47	0	171	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	82	1059	194	188	1686	154	95	410	82	120	568	78
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	279	51	49	444	41	25	108	22	32	149	21
Total Analysis Volume [veh/h]	86	1115	204	198	1775	162	100	432	86	126	598	82
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	13	25	14	14	21	0	14	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	27	27	11	31	40	7	17	17	8	18	18
g / C, Green / Cycle	0.09	0.39	0.39	0.15	0.45	0.57	0.09	0.24	0.24	0.11	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.25	0.11	0.35	0.10	0.06	0.14	0.14	0.07	0.18	0.18
s, saturation flow rate [veh/h]	1774	3547	1719	1774	5074	1583	1774	1937	1827	1774	1863	1858
c, Capacity [veh/h]	160	1375	667	267	2272	856	170	462	436	194	469	468
d1, Uniform Delay [s]	30.45	17.50	17.50	28.45	16.42	8.23	30.33	23.52	23.55	29.89	23.96	23.97
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.78	2.35	4.79	4.07	2.75	0.11	3.22	1.13	1.22	3.65	2.14	2.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

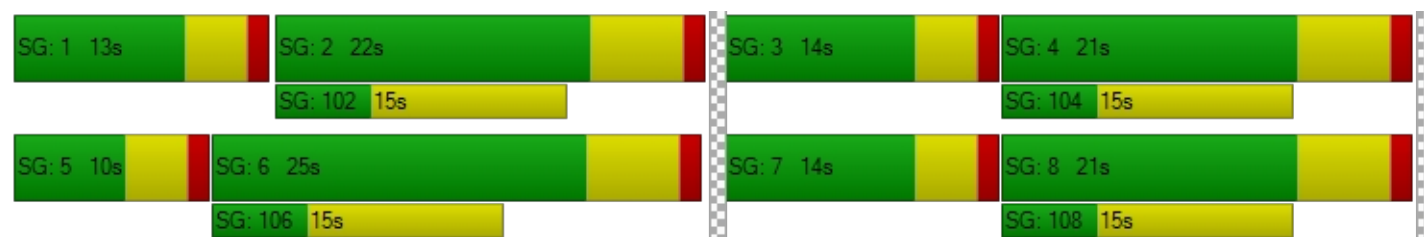
X, volume / capacity	0.54	0.65	0.65	0.74	0.78	0.19	0.59	0.57	0.58	0.65	0.72	0.73
d, Delay for Lane Group [s/veh]	33.23	19.86	22.29	32.52	19.17	8.33	33.55	24.65	24.77	33.54	26.10	26.12
Lane Group LOS	C	B	C	C	B	A	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.42	5.52	5.80	3.24	7.29	1.03	1.66	3.68	3.51	2.09	4.94	4.94
50th-Percentile Queue Length [ft]	35.54	137.89	144.94	81.01	182.26	25.85	41.60	91.90	87.69	52.37	123.57	123.48
95th-Percentile Queue Length [veh]	2.56	9.37	9.75	5.83	11.72	1.86	3.00	6.62	6.31	3.77	8.59	8.58
95th-Percentile Queue Length [ft]	63.98	234.18	243.66	145.82	292.96	46.53	74.88	165.42	157.85	94.26	214.73	214.60

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.23	20.35	22.29	32.52	19.17	8.33	33.55	24.70	24.77	33.54	26.11	26.12
Movement LOS	C	C	C	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	21.42			19.58			26.14			27.28		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	22.17											
Intersection LOS	C											
Intersection V/C	0.638											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.325

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	37	208	0	0	214	156	106	0	18	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	0.86	0.86	0.86	0.86	0.86	0.86
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	11	0	18	27	0	0	164	0	0	173	31
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	325	0	18	350	236	91	164	15	0	173	31
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	86	0	5	92	62	24	43	4	0	46	8
Total Analysis Volume [veh/h]	59	342	0	19	368	248	96	173	16	0	182	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	21	0	18	29	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	19	19	19	6	33	33	2	29	29
g / C, Green / Cycle	0.32	0.32	0.32	0.32	0.32	0.32	0.10	0.55	0.55	0.04	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.08	0.10	0.10	0.02	0.20	0.20	0.06	0.06	0.06	0.00	0.06	0.07
s, saturation flow rate [veh/h]	723	1676	1676	931	1676	1456	1597	1676	1627	1597	1676	1589
c, Capacity [veh/h]	215	531	531	327	531	461	169	914	887	61	801	759
d1, Uniform Delay [s]	24.66	15.60	15.60	18.53	17.41	17.48	25.53	6.58	6.58	0.00	8.75	8.77
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	0.35	0.35	0.07	1.17	1.40	2.99	0.23	0.24	0.00	0.35	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

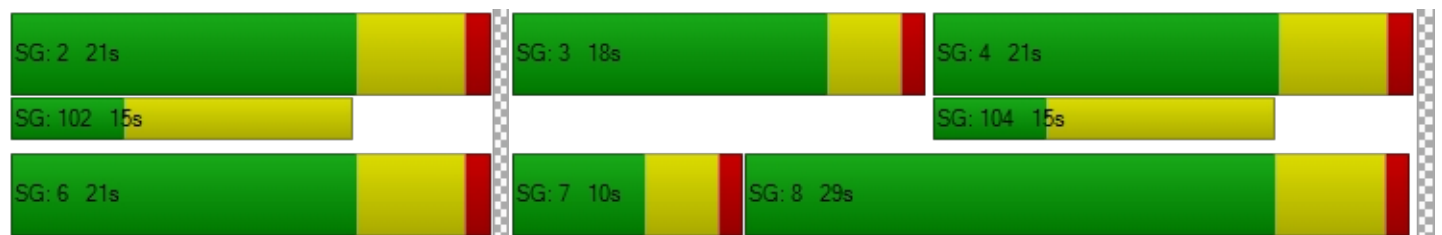
X, volume / capacity	0.27	0.32	0.32	0.06	0.62	0.63	0.57	0.10	0.11	0.00	0.14	0.14
d, Delay for Lane Group [s/veh]	25.34	15.95	15.95	18.60	18.58	18.88	28.52	6.81	6.82	0.00	9.11	9.16
Lane Group LOS	C	B	B	B	B	B	C	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.76	1.58	1.58	0.19	3.45	3.08	1.32	0.49	0.48	0.00	0.70	0.69
50th-Percentile Queue Length [ft]	18.92	39.61	39.61	4.83	86.16	77.00	33.10	12.13	12.00	0.00	17.49	17.27
95th-Percentile Queue Length [veh]	1.36	2.85	2.85	0.35	6.20	5.54	2.38	0.87	0.86	0.00	1.26	1.24
95th-Percentile Queue Length [ft]	34.05	71.30	71.30	8.70	155.09	138.59	59.58	21.83	21.60	0.00	31.48	31.09

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	25.34	15.95	15.95	18.60	18.61	18.88	28.52	6.82	6.82	0.00	9.13	9.16
Movement LOS	C	B	B	B	B	B	C	A	A	A	A	A
d_A, Approach Delay [s/veh]	17.33			18.72			14.13			9.13		
Approach LOS	B			B			B			A		
d_I, Intersection Delay [s/veh]	16.16											
Intersection LOS	B											
Intersection V/C	0.325											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	17.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	793	58	78	245	0	0	0	0	57	0	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.86	0.86	0.86	0.86	0.86	0.86	0.96	0.96	0.96	0.96	0.96	0.96
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	45	736	95	47	793	58	136	238	77	45	91	32
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	1418	145	114	1004	58	136	238	77	100	91	175
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	373	38	30	264	15	36	63	20	26	24	46
Total Analysis Volume [veh/h]	47	1493	153	120	1057	61	143	251	81	105	96	184
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.2	5.2	0.0	3.2	5.2	0.0	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	22	0	10	22	0	11	21	0	17	27	10
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	5	36	36	8	39	39	9	11	11	7	9	19
g / C, Green / Cycle	0.07	0.52	0.52	0.11	0.56	0.56	0.13	0.15	0.15	0.10	0.13	0.27
(v / s)_i Volume / Saturation Flow Rate	0.02	0.34	0.34	0.04	0.23	0.23	0.09	0.08	0.05	0.07	0.03	0.13
s, saturation flow rate [veh/h]	3101	3192	1598	3101	3192	1630	1597	3192	1482	1597	3192	1425
c, Capacity [veh/h]	231	1655	829	354	1782	910	200	486	226	161	407	340
d1, Uniform Delay [s]	30.44	12.36	12.37	28.56	8.89	8.89	29.40	27.31	26.61	30.29	27.48	23.29
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.43	2.11	4.16	0.56	0.72	1.40	4.66	0.85	0.96	4.42	0.30	1.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

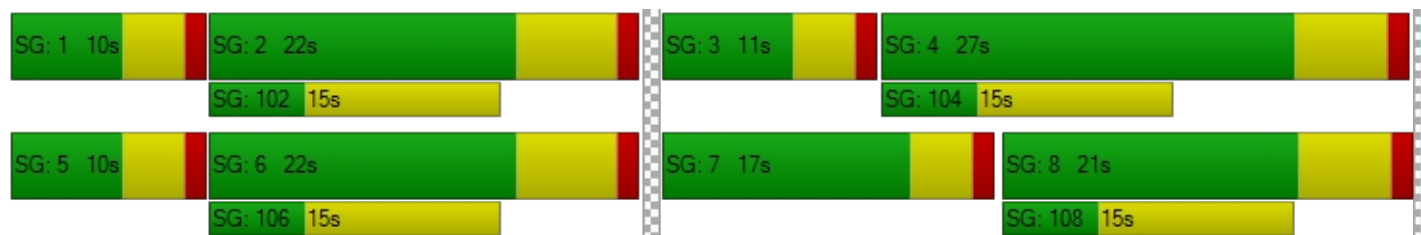
X, volume / capacity	0.20	0.66	0.66	0.34	0.42	0.42	0.71	0.52	0.36	0.65	0.24	0.54
d, Delay for Lane Group [s/veh]	30.87	14.46	16.53	29.13	9.61	10.29	34.06	28.16	27.58	34.71	27.77	24.62
Lane Group LOS	C	B	B	C	A	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.36	5.50	5.99	0.89	2.70	2.93	2.41	1.85	1.19	1.79	0.69	2.55
50th-Percentile Queue Length [ft]	9.09	137.46	149.71	22.36	67.38	73.19	60.15	46.26	29.70	44.70	17.30	63.81
95th-Percentile Queue Length [veh]	0.65	9.34	10.00	1.61	4.85	5.27	4.33	3.33	2.14	3.22	1.25	4.59
95th-Percentile Queue Length [ft]	16.36	233.60	250.04	40.24	121.29	131.75	108.27	83.26	53.46	80.46	31.15	114.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.87	15.01	16.53	29.13	9.81	10.29	34.06	28.16	27.58	34.71	27.77	24.62
Movement LOS	C	B	B	C	A	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	15.59			11.71			29.84			28.16		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.38											
Intersection LOS	B											
Intersection V/C	0.589											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	783	108	29	852	64	82	127	48	71	136	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	1.31	1.31	1.31	1.31	1.31	1.31
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	19	177	0	0	707	0	0	237	22	0	263	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	1226	145	39	1849	86	107	403	85	93	441	34
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	323	38	10	487	23	28	106	22	24	116	9
Total Analysis Volume [veh/h]	87	1291	153	41	1946	91	113	424	89	98	464	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	64	41	0	34	41	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	0	39	39	0	39	39	17	17	17	17	17	17
g / C, Green / Cycle	0.00	0.65	0.65	0.00	0.65	0.65	0.28	0.28	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	1.29	0.30	0.30	0.33	0.42	0.42	0.14	0.16	0.16	0.12	0.15	0.15
s, saturation flow rate [veh/h]	68	3192	1587	123	3192	1638	805	1676	1577	795	1676	1634
c, Capacity [veh/h]	120	2075	1032	120	2075	1065	233	475	447	228	475	463
d1, Uniform Delay [s]	30.00	5.27	5.27	30.00	6.35	6.37	25.79	18.28	18.31	25.59	18.14	18.16
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	31.52	0.75	1.51	7.59	1.58	3.09	1.56	1.01	1.10	1.29	0.93	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

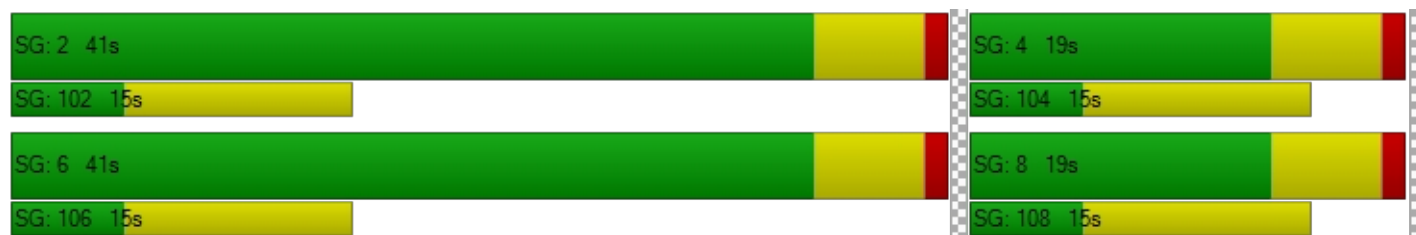
X, volume / capacity	0.73	0.46	0.46	0.34	0.65	0.65	0.49	0.55	0.56	0.43	0.53	0.53
d, Delay for Lane Group [s/veh]	61.52	6.02	6.77	37.59	7.93	9.45	27.36	19.29	19.40	26.87	19.07	19.11
Lane Group LOS	E	A	A	D	A	A	C	B	B	C	B	B
Critical Lane Group	No	No	No	No	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	2.50	1.94	2.15	0.94	3.35	3.91	1.55	2.82	2.69	1.32	2.68	2.63
50th-Percentile Queue Length [ft]	62.52	48.52	53.67	23.41	83.82	97.71	38.65	70.57	67.22	32.98	67.08	65.78
95th-Percentile Queue Length [veh]	4.50	3.49	3.86	1.69	6.04	7.04	2.78	5.08	4.84	2.37	4.83	4.74
95th-Percentile Queue Length [ft]	112.53	87.34	96.61	42.14	150.88	175.88	69.56	127.03	120.99	59.36	120.75	118.40

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	61.52	6.21	6.77	37.59	8.40	9.45	27.36	19.33	19.40	26.87	19.09	19.11
Movement LOS	E	A	A	D	A	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	9.41			9.02			20.79			20.37		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	12.07											
Intersection LOS	B											
Intersection V/C	0.581											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.235

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↻↵			↵↻↵			↵↻↵			↵↻↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	243	5	28	215	24	56	50	20	7	48	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.31	1.31	1.31	1.31	1.31	1.31
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	11	6	0	27	0	0	245	0	13	268	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	378	14	42	352	36	73	311	26	22	331	18
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	99	4	11	93	9	19	82	7	6	87	5
Total Analysis Volume [veh/h]	77	398	15	44	371	38	77	327	27	23	348	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	28	0	0	28	0	0	32	0	0	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	39	39	39	39	39	39	17	17	17	17	17	17
g / C, Green / Cycle	0.64	0.64	0.64	0.64	0.64	0.64	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.09	0.12	0.12	0.05	0.12	0.12	0.08	0.11	0.11	0.02	0.11	0.11
s, saturation flow rate [veh/h]	875	1676	1655	872	1676	1623	910	1676	1632	921	1676	1646
c, Capacity [veh/h]	634	1079	1066	632	1079	1045	278	485	472	283	485	477
d1, Uniform Delay [s]	5.60	4.34	4.34	5.37	4.34	4.35	22.38	16.95	16.97	20.85	17.02	17.03
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.39	0.40	0.40	0.21	0.40	0.41	0.54	0.47	0.48	0.12	0.49	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.12	0.19	0.19	0.07	0.19	0.19	0.28	0.37	0.37	0.08	0.38	0.38
d, Delay for Lane Group [s/veh]	5.99	4.74	4.75	5.59	4.74	4.76	22.92	17.42	17.45	20.98	17.51	17.54
Lane Group LOS	A	A	A	A	A	A	C	B	B	C	B	B
Critical Lane Group	No	No	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.33	0.62	0.62	0.18	0.62	0.61	0.92	1.77	1.74	0.25	1.83	1.81
50th-Percentile Queue Length [ft]	8.21	15.59	15.48	4.49	15.53	15.29	23.00	44.14	43.42	6.37	45.81	45.35
95th-Percentile Queue Length [veh]	0.59	1.12	1.11	0.32	1.12	1.10	1.66	3.18	3.13	0.46	3.30	3.27
95th-Percentile Queue Length [ft]	14.77	28.06	27.87	8.08	27.96	27.53	41.41	79.46	78.16	11.47	82.47	81.63

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	5.99	4.74	4.75	5.59	4.75	4.76	22.92	17.43	17.45	20.98	17.52	17.54
Movement LOS	A	A	A	A	A	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	4.94			4.83			18.41			17.73		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	11.03											
Intersection LOS	B											
Intersection V/C	0.235											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.573

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	1	950	16	30	401	3	10	3	0	37	4	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.86	0.86	0.86	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	93	793	77	28	927	31	59	141	116	38	85	79
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	1610	91	54	1272	34	69	144	116	75	89	162
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	424	24	14	335	9	18	38	31	20	23	43
Total Analysis Volume [veh/h]	99	1695	96	57	1339	36	73	152	122	79	94	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	24	0	10	22	0	10	21	0	15	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	37	37	6	36	36	6	13	13	6	13	13
g / C, Green / Cycle	0.10	0.53	0.53	0.09	0.51	0.51	0.09	0.18	0.18	0.09	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.06	0.37	0.37	0.04	0.28	0.28	0.05	0.05	0.08	0.05	0.06	0.12
s, saturation flow rate [veh/h]	1597	3192	1631	1597	3192	1654	1597	3192	1482	1597	1676	1425
c, Capacity [veh/h]	161	1682	859	136	1633	846	137	588	273	142	314	267
d1, Uniform Delay [s]	30.16	12.45	12.47	30.36	11.66	11.66	30.64	24.46	25.38	30.56	24.49	26.27
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.75	2.50	4.85	2.03	1.36	2.62	3.16	0.23	1.15	3.37	0.53	2.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

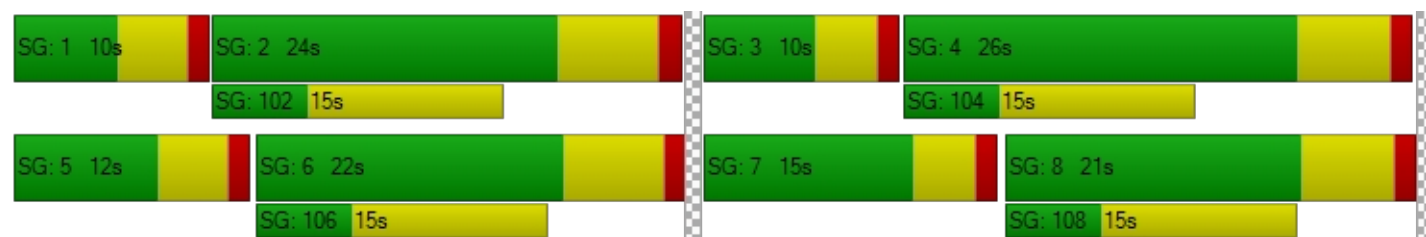
X, volume / capacity	0.61	0.70	0.71	0.42	0.55	0.55	0.53	0.26	0.45	0.56	0.30	0.64
d, Delay for Lane Group [s/veh]	33.91	14.95	17.31	32.39	13.03	14.28	33.80	24.69	26.53	33.93	25.02	28.83
Lane Group LOS	C	B	B	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.66	6.08	6.80	0.93	4.19	4.64	1.23	1.02	1.75	1.33	1.29	2.61
50th-Percentile Queue Length [ft]	41.53	152.06	169.92	23.28	104.80	115.98	30.63	25.46	43.80	33.22	32.22	65.36
95th-Percentile Queue Length [veh]	2.99	10.13	11.07	1.68	7.55	8.17	2.21	1.83	3.15	2.39	2.32	4.71
95th-Percentile Queue Length [ft]	74.76	253.17	276.81	41.90	188.65	204.28	55.13	45.82	78.84	59.80	57.99	117.65

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.91	15.66	17.31	32.39	13.43	14.28	33.80	24.69	26.53	33.93	25.02	28.83
Movement LOS	C	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.70			14.21			27.25			28.96		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.77											
Intersection LOS	B											
Intersection V/C	0.573											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	185.00	100.00	100.00	165.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	98	775	10	13	831	144	155	52	66	30	145	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	0.90	0.90	0.90	0.90	0.90	0.90
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	24	194	0	0	729	0	0	6	30	0	14	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	1233	13	17	1843	193	140	53	89	27	145	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	324	3	4	485	51	37	14	23	7	38	2
Total Analysis Volume [veh/h]	163	1298	14	18	1940	203	147	56	94	28	153	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	26	0	22	38	0	11	32	0	27	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	8	50	50	4	46	46	9	20	20	0	9	9
g / C, Green / Cycle	0.10	0.63	0.63	0.05	0.58	0.58	0.11	0.25	0.25	0.00	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.13	0.27	0.27	0.01	0.45	0.45	0.09	0.02	0.06	0.66	0.05	0.05
s, saturation flow rate [veh/h]	1270	3192	1667	1270	3192	1597	1597	3192	1482	42	1676	1651
c, Capacity [veh/h]	201	2011	1050	139	1847	924	180	786	365	90	182	179
d1, Uniform Delay [s]	37.61	7.51	7.51	37.49	12.81	12.92	34.70	23.13	24.27	40.00	33.37	33.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.58	0.67	1.28	0.41	3.17	6.44	8.81	0.04	0.37	8.78	1.67	1.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.43	0.43	0.13	0.77	0.78	0.82	0.07	0.26	0.31	0.44	0.44
d, Delay for Lane Group [s/veh]	45.20	8.18	8.79	37.91	15.98	19.36	43.51	23.17	24.64	48.78	35.04	35.11
Lane Group LOS	D	A	A	D	B	B	D	C	C	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.59	3.06	3.38	0.35	8.54	9.54	3.09	0.39	1.38	0.84	1.47	1.47
50th-Percentile Queue Length [ft]	89.78	76.58	84.45	8.63	213.49	238.51	77.31	9.66	34.61	21.05	36.81	36.67
95th-Percentile Queue Length [veh]	6.46	5.51	6.08	0.62	13.33	14.61	5.57	0.70	2.49	1.52	2.65	2.64
95th-Percentile Queue Length [ft]	161.61	137.85	152.01	15.54	333.30	365.15	139.15	17.40	62.29	37.88	66.25	66.01

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	45.20	8.38	8.79	37.91	16.88	19.36	43.51	23.17	24.64	48.78	35.07	35.11
Movement LOS	D	A	A	D	B	B	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	12.45			17.29			33.70			37.12		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	17.64											
Intersection LOS	B											
Intersection V/C	0.719											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	9.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.175

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	65	219	6	21	175	44	34	14	16	7	42	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	0.90	0.90	0.90	0.90	0.90	0.90
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	10	17	0	1	39	0	0	6	0	0	13	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	348	9	33	303	66	31	19	14	6	51	20
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	92	2	9	80	17	8	5	4	2	13	5
Total Analysis Volume [veh/h]	114	366	9	35	319	69	33	20	15	6	54	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	34	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	32	32	32	32	32	32	24	24	24	24	24	24
g / C, Green / Cycle	0.53	0.53	0.53	0.53	0.53	0.53	0.40	0.40	0.40	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.14	0.13	0.13	0.04	0.13	0.14	0.03	0.01	0.01	0.01	0.03	0.03
s, saturation flow rate [veh/h]	792	1487	1474	801	1487	1397	1053	1487	1290	1092	1487	1352
c, Capacity [veh/h]	471	793	786	480	793	745	506	595	516	530	595	541
d1, Uniform Delay [s]	10.86	7.48	7.48	9.53	7.54	7.56	12.43	10.93	10.95	11.78	11.08	11.11
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.22	0.70	0.71	0.30	0.75	0.82	0.25	0.09	0.12	0.04	0.21	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.24	0.24	0.24	0.07	0.25	0.25	0.07	0.03	0.03	0.01	0.06	0.07
d, Delay for Lane Group [s/veh]	12.08	8.18	8.19	9.82	8.29	8.38	12.68	11.02	11.07	11.82	11.29	11.35
Lane Group LOS	B	A	A	A	A	A	B	B	B	B	B	B
Critical Lane Group	Yes	No	No	No	No	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	0.89	1.01	1.01	0.24	1.08	1.05	0.28	0.13	0.13	0.05	0.29	0.29
50th-Percentile Queue Length [ft]	22.24	25.33	25.21	5.92	26.93	26.15	7.02	3.36	3.36	1.21	7.31	7.29
95th-Percentile Queue Length [veh]	1.60	1.82	1.82	0.43	1.94	1.88	0.51	0.24	0.24	0.09	0.53	0.53
95th-Percentile Queue Length [ft]	40.04	45.60	45.38	10.65	48.47	47.07	12.64	6.05	6.05	2.18	13.15	13.13

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	12.08	8.19	8.19	9.82	8.33	8.38	12.68	11.03	11.07	11.82	11.31	11.35
Movement LOS	B	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	9.10			8.46			11.84			11.36		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	9.19											
Intersection LOS	A											
Intersection V/C	0.175											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	524	1	323	0	660	194	44	1188	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	174	0	0	307	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	524	1	323	0	748	169	38	1341	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	0	85	0	197	44	10	353	0	0	0	0
Total Analysis Volume [veh/h]	552	1	340	0	787	178	40	1412	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	0	20	0	19	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	30	30	5	37
g / C, Green / Cycle	0.32	0.32	0.32	0.50	0.50	0.08	0.62
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	0.27	0.23	0.24	0.01	0.35
s, saturation flow rate [veh/h]	1416	1416	1264	2831	1355	2750	4050
c, Capacity [veh/h]	448	449	400	1424	681	221	2498
d1, Uniform Delay [s]	17.41	17.41	19.16	9.59	9.72	25.74	6.77
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.38	1.38	5.25	1.04	2.34	0.39	0.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

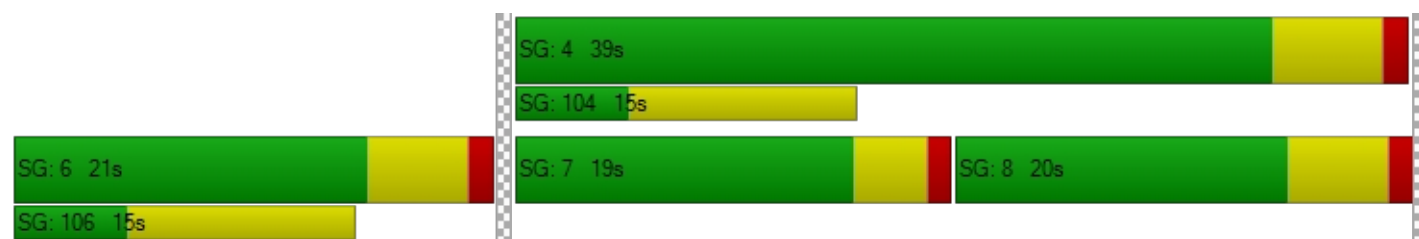
X, volume / capacity	0.62	0.62	0.85	0.45	0.47	0.18	0.57
d, Delay for Lane Group [s/veh]	18.79	18.79	24.42	10.63	12.06	26.13	7.70
Lane Group LOS	B	B	C	B	B	C	A
Critical Lane Group	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.94	2.94	4.33	2.25	2.52	0.26	2.42
50th-Percentile Queue Length [ft]	73.46	73.46	108.22	56.33	62.96	6.39	60.51
95th-Percentile Queue Length [veh]	5.29	5.29	7.74	4.06	4.53	0.46	4.36
95th-Percentile Queue Length [ft]	132.23	132.23	193.52	101.40	113.33	11.51	108.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	18.79	18.79	24.42	0.00	10.89	12.06	26.13	7.70	0.00	0.00	0.00	0.00
Movement LOS	B	B	C		B	B	C	A				
d_A, Approach Delay [s/veh]	20.93			11.11			8.21			0.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	12.49											
Intersection LOS	B											
Intersection V/C	0.618											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.866

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Base Volume Input [veh/h]	417	68	48	29	0	441	196	815	177	0	914	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	1.00	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	174	0	0	307	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	417	68	48	29	0	441	171	883	154	0	1102	17
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	18	13	8	0	116	45	232	41	0	290	4
Total Analysis Volume [veh/h]	439	72	51	31	0	464	180	929	162	0	1160	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Permiss	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups						1,3						
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	10	0	16	16	39	0	0	23	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No		No	No	No			No	
Maximum Recall		No		No		No	No	No			No	
Pedestrian Recall		No		No		No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	8	45	14	37	21	21
g / C, Green / Cycle	0.27	0.27	0.27	0.11	0.64	0.20	0.53	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.04	0.02	0.37	0.13	0.23	0.22	0.20
s, saturation flow rate [veh/h]	1127	1203	1264	1416	1264	1416	4050	4050	1471
c, Capacity [veh/h]	393	415	343	162	773	283	2141	1215	441
d1, Uniform Delay [s]	24.79	23.78	19.36	28.07	8.35	25.66	10.09	21.93	21.44
k, delay calibration	0.11	0.11	0.11	0.11	0.35	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.70	1.58	0.20	0.57	2.39	2.36	0.64	3.83	7.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.63	0.63	0.15	0.19	0.60	0.64	0.43	0.73	0.67
d, Delay for Lane Group [s/veh]	26.50	25.36	19.56	28.64	10.74	28.02	10.74	25.76	29.22
Lane Group LOS	C	C	B	C	B	C	B	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	3.74	3.81	0.59	0.47	3.60	2.71	2.47	4.30	4.74
50th-Percentile Queue Length [ft]	93.42	95.28	14.86	11.64	90.12	67.63	61.74	107.50	118.40
95th-Percentile Queue Length [veh]	6.73	6.86	1.07	0.84	6.49	4.87	4.45	7.70	8.31
95th-Percentile Queue Length [ft]	168.16	171.51	26.75	20.95	162.22	121.73	111.14	192.52	207.63

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.01	25.36	19.56	28.64	0.00	10.74	28.02	10.74	0.00	0.00	26.59	29.22
Movement LOS	C	C	B	C		B	C	B			C	C
d_A, Approach Delay [s/veh]	25.34			11.86			13.54			26.63		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	19.88											
Intersection LOS	B											
Intersection V/C	0.866											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.608

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	52	341	47	43	395	81	72	582	72	35	736	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	174	0	0	307	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	341	47	43	395	81	63	680	63	30	947	30
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	90	12	11	104	21	17	179	17	8	249	8
Total Analysis Volume [veh/h]	55	359	49	45	416	85	66	716	66	32	997	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	18	29	10	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	17	17	5	17	17	6	35	43	5	34	34
g / C, Green / Cycle	0.08	0.24	0.24	0.07	0.24	0.24	0.08	0.50	0.61	0.06	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.04	0.13	0.04	0.03	0.17	0.17	0.05	0.25	0.03	0.02	0.35	0.35
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1401	1416	2831	2237	1416	1487	1471
c, Capacity [veh/h]	112	691	309	104	355	335	121	1423	1294	92	718	710
d1, Uniform Delay [s]	30.89	22.90	20.80	31.02	24.50	24.56	30.71	11.59	6.40	31.29	14.37	14.37
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.33	0.61	0.24	2.79	2.78	3.07	3.80	1.27	0.02	2.21	6.18	6.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.49	0.52	0.16	0.43	0.72	0.73	0.55	0.50	0.05	0.35	0.72	0.72
d, Delay for Lane Group [s/veh]	34.22	23.51	21.04	33.81	27.28	27.62	34.51	12.87	6.42	33.49	20.55	20.62
Lane Group LOS	C	C	C	C	C	C	C	B	A	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.94	2.39	0.60	0.76	3.83	3.68	1.13	3.28	0.17	0.54	6.54	6.49
50th-Percentile Queue Length [ft]	23.43	59.83	14.99	19.08	95.70	91.97	28.23	82.02	4.19	13.57	163.59	162.15
95th-Percentile Queue Length [veh]	1.69	4.31	1.08	1.37	6.89	6.62	2.03	5.91	0.30	0.98	10.74	10.66
95th-Percentile Queue Length [ft]	42.18	107.70	26.97	34.34	172.26	165.55	50.82	147.64	7.55	24.42	268.47	266.57

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.22	23.51	21.04	33.81	27.41	27.62	34.51	12.87	6.42	33.49	20.58	20.62
Movement LOS	C	C	C	C	C	C	C	B	A	C	C	C
d_A, Approach Delay [s/veh]	24.52			27.97			14.05			20.97		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	20.83											
Intersection LOS	C											
Intersection V/C	0.608											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	24.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	2	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	62	635	227	26	707	302	114	316	32	162	603	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	174	0	0	307	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	635	227	26	707	302	99	449	28	141	832	46
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	167	60	7	186	79	26	118	7	37	219	12
Total Analysis Volume [veh/h]	65	668	239	27	744	318	104	473	29	148	876	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	18	29	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	23	23	4	21	21	7	28	28	7	28	28
g / C, Green / Cycle	0.08	0.32	0.32	0.06	0.30	0.30	0.11	0.40	0.40	0.10	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.19	0.02	0.26	0.25	0.07	0.17	0.17	0.05	0.31	0.04
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1457	2750	2831	1264
c, Capacity [veh/h]	117	914	408	86	852	381	152	599	587	272	1117	499
d1, Uniform Delay [s]	30.85	21.00	19.78	31.46	23.19	22.85	30.11	15.05	15.05	30.03	18.58	13.34
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.15	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.03	1.14	1.34	2.03	2.98	6.52	5.37	2.18	2.24	1.69	5.54	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.55	0.73	0.59	0.31	0.87	0.84	0.69	0.42	0.42	0.54	0.78	0.10
d, Delay for Lane Group [s/veh]	34.88	22.14	21.12	33.49	26.17	29.37	35.49	17.23	17.29	31.72	24.12	13.72
Lane Group LOS	C	C	C	C	C	C	D	B	B	C	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.12	4.43	3.04	0.46	5.52	5.04	1.80	2.89	2.85	1.17	6.21	0.47
50th-Percentile Queue Length [ft]	27.97	110.82	76.06	11.49	137.94	125.97	45.03	72.31	71.29	29.33	155.36	11.86
95th-Percentile Queue Length [veh]	2.01	7.89	5.48	0.83	9.37	8.72	3.24	5.21	5.13	2.11	10.30	0.85
95th-Percentile Queue Length [ft]	50.35	197.14	136.91	20.68	234.25	218.00	81.06	130.16	128.33	52.79	257.57	21.35

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.88	22.14	21.12	33.49	26.17	29.37	35.49	17.26	17.29	31.72	24.12	13.72
Movement LOS	C	C	C	C	C	C	D	B	B	C	C	B
d_A, Approach Delay [s/veh]	22.74			27.29			20.39			24.70		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.25											
Intersection LOS	C											
Intersection V/C	0.692											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	24	131	60	57	73	77	73	294	22	47	605	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.11	1.11	1.11	1.11	1.11	1.11
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	174	0	0	307	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	131	60	57	73	77	81	500	24	52	979	90
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	34	16	15	19	20	21	132	6	14	258	24
Total Analysis Volume [veh/h]	25	138	63	60	77	81	85	526	25	55	1031	95
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	15	29	0	10	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	11	11	6	13	13	6	40	40	6	39	39
g / C, Green / Cycle	0.06	0.16	0.16	0.08	0.18	0.18	0.09	0.57	0.57	0.08	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.05	0.04	0.05	0.06	0.06	0.13	0.13	0.04	0.26	0.26
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1453	1416	2831	1424
c, Capacity [veh/h]	85	235	200	115	267	227	131	1607	825	112	1569	789
d1, Uniform Delay [s]	31.50	27.35	26.11	30.86	24.85	25.18	30.67	7.51	7.52	30.89	9.46	9.47
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.91	2.32	0.89	3.64	0.59	0.95	5.33	0.33	0.64	3.33	1.04	2.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	0.59	0.32	0.52	0.29	0.36	0.65	0.23	0.23	0.49	0.48	0.48
d, Delay for Lane Group [s/veh]	33.41	29.67	27.00	34.50	25.44	26.13	36.00	7.83	8.16	34.22	10.51	11.54
Lane Group LOS	C	C	C	C	C	C	D	A	A	C	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.43	2.14	0.91	1.03	1.07	1.15	1.49	1.13	1.24	0.94	2.93	3.18
50th-Percentile Queue Length [ft]	10.64	53.39	22.86	25.67	26.72	28.81	37.21	28.13	30.90	23.43	73.23	79.42
95th-Percentile Queue Length [veh]	0.77	3.84	1.65	1.85	1.92	2.07	2.68	2.03	2.22	1.69	5.27	5.72
95th-Percentile Queue Length [ft]	19.15	96.11	41.15	46.20	48.10	51.86	66.99	50.63	55.62	42.18	131.81	142.96

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.41	29.67	27.00	34.50	25.44	26.13	36.00	7.93	8.16	34.22	10.79	11.54
Movement LOS	C	C	C	C	C	C	D	A	A	C	B	B
d_A, Approach Delay [s/veh]	29.34			28.19			11.69			11.94		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.18											
Intersection LOS	B											
Intersection V/C	0.460											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.626

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	145	763	32	24	702	169	89	165	94	46	335	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	1.11	1.11	1.11	1.11	1.11	1.11
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	37	216	1	1	757	0	0	140	77	3	300	3
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	231	1238	44	33	1698	226	99	323	181	54	672	52
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	326	12	9	447	59	26	85	48	14	177	14
Total Analysis Volume [veh/h]	243	1303	46	35	1787	238	104	340	191	57	707	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	18	29	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	30	30	5	27	27	19	19	19	19	19	19
g / C, Green / Cycle	0.13	0.51	0.51	0.08	0.46	0.46	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.08	0.29	0.03	0.02	0.39	0.17	0.16	0.11	0.13	0.07	0.15	0.04
s, saturation flow rate [veh/h]	3101	4567	1425	1597	4567	1425	664	3192	1425	782	4567	1425
c, Capacity [veh/h]	392	2314	722	122	2086	651	236	1011	451	272	1446	451
d1, Uniform Delay [s]	24.84	10.21	7.54	26.16	14.54	10.63	24.21	15.68	16.18	21.00	16.57	14.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	1.00	0.17	1.27	4.80	1.58	1.29	0.19	0.63	0.38	0.26	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

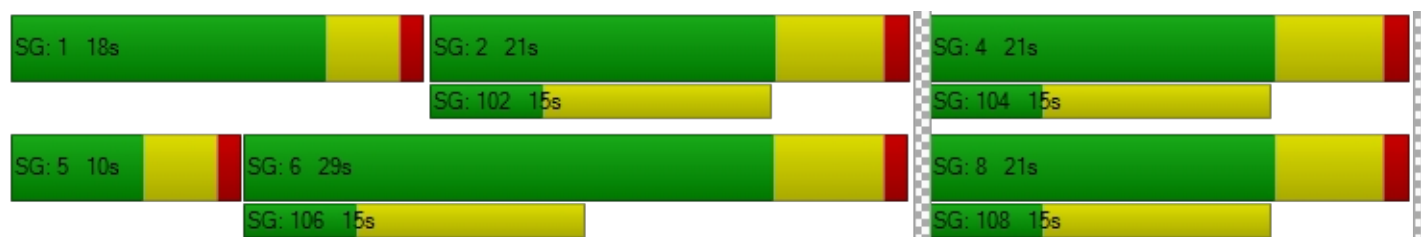
X, volume / capacity	0.62	0.56	0.06	0.29	0.86	0.37	0.44	0.34	0.42	0.21	0.49	0.12
d, Delay for Lane Group [s/veh]	26.43	11.21	7.71	27.43	19.34	12.21	25.50	15.87	16.81	21.37	16.83	14.69
Lane Group LOS	C	B	A	C	B	B	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	1.57	3.17	0.26	0.48	6.52	1.92	1.37	1.56	1.85	0.65	2.28	0.48
50th-Percentile Queue Length [ft]	39.16	79.13	6.62	11.89	162.98	47.98	34.21	38.98	46.37	16.22	56.98	11.89
95th-Percentile Queue Length [veh]	2.82	5.70	0.48	0.86	10.71	3.45	2.46	2.81	3.34	1.17	4.10	0.86
95th-Percentile Queue Length [ft]	70.49	142.44	11.92	21.39	267.67	86.37	61.58	70.17	83.47	29.20	102.57	21.40

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.43	11.21	7.71	27.43	19.34	12.21	25.50	15.87	16.81	21.37	16.83	14.69
Movement LOS	C	B	A	C	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	13.43			18.65			17.73			17.00		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.65											
Intersection LOS	B											
Intersection V/C	0.626											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.239

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↵			↵ ↑ ↵			↵ ↑ ↑ ↑ ↵			↵ ↑ ↑ ↑ ↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	21	166	22	35	115	22	32	163	9	47	389	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	16	6	1	39	0	0	159	0	11	343	2
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	267	39	54	213	33	32	322	9	58	732	73
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	70	10	14	56	9	8	85	2	15	193	19
Total Analysis Volume [veh/h]	34	281	41	57	224	35	34	339	9	61	771	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	31	0	0	31	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	27	27	27	27	27	27	29	29	29	29	29	29
g / C, Green / Cycle	0.45	0.45	0.45	0.45	0.45	0.45	0.48	0.48	0.48	0.48	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.10	0.06	0.08	0.08	0.06	0.07	0.01	0.07	0.14	0.14
s, saturation flow rate [veh/h]	1004	1676	1603	948	1676	1599	582	4567	1425	933	4567	1579
c, Capacity [veh/h]	507	754	722	474	754	720	343	2207	689	517	2207	763
d1, Uniform Delay [s]	11.72	10.05	10.07	12.55	9.85	9.86	12.14	8.65	8.06	10.60	9.28	9.31
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	0.66	0.70	0.52	0.50	0.54	0.58	0.15	0.03	0.47	0.32	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

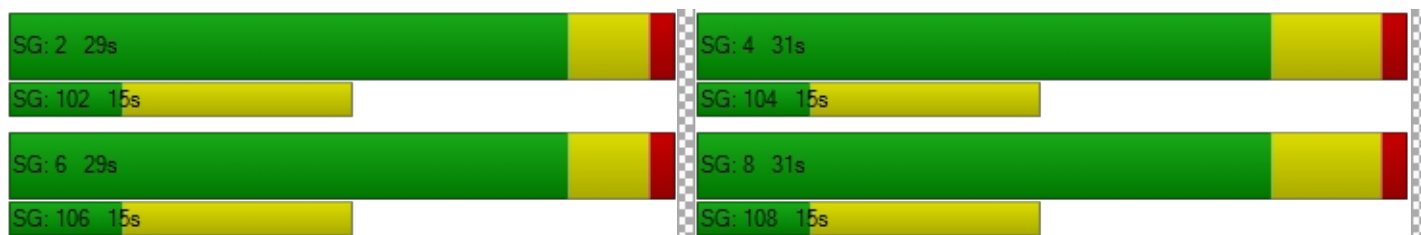
X, volume / capacity	0.07	0.22	0.22	0.12	0.17	0.18	0.10	0.15	0.01	0.12	0.28	0.29
d, Delay for Lane Group [s/veh]	11.98	10.71	10.78	13.07	10.35	10.40	12.71	8.80	8.09	11.07	9.61	10.26
Lane Group LOS	B	B	B	B	B	B	B	A	A	B	A	B
Critical Lane Group	No	No	Yes	No	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.26	1.11	1.09	0.47	0.87	0.85	0.31	0.67	0.05	0.47	1.34	1.55
50th-Percentile Queue Length [ft]	6.57	27.73	27.21	11.81	21.75	21.36	7.65	16.85	1.36	11.85	33.62	38.87
95th-Percentile Queue Length [veh]	0.47	2.00	1.96	0.85	1.57	1.54	0.55	1.21	0.10	0.85	2.42	2.80
95th-Percentile Queue Length [ft]	11.83	49.91	48.97	21.25	39.15	38.45	13.76	30.33	2.45	21.34	60.51	69.97

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	11.98	10.74	10.78	13.07	10.37	10.40	12.71	8.80	8.09	11.07	9.73	10.26
Movement LOS	B	B	B	B	B	B	B	A	A	B	A	B
d_A, Approach Delay [s/veh]	10.86			10.86			9.13			9.86		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	10.06											
Intersection LOS	B											
Intersection V/C	0.239											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	23.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.693

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	0	0	0	2	0	1	2	0	1
Pocket Length [ft]	500.00	100.00	280.00	100.00	100.00	100.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	40.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	173	876	239	30	356	82	39	130	47	151	275	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	233	1006	316	5	1215	51	113	180	231	299	282	16
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	368	1689	502	28	1493	115	152	310	278	450	557	66
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	97	444	132	7	393	30	40	82	73	118	147	17
Total Analysis Volume [veh/h]	387	1778	528	29	1572	121	160	326	293	474	586	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	25	14	10	22	0	10	21	0	14	25	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	11	35	5	29	29	7	10	12	15	15
g / C, Green / Cycle	0.16	0.50	0.07	0.41	0.41	0.10	0.14	0.17	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.12	0.39	0.01	0.34	0.08	0.05	0.07	0.15	0.13	0.05
s, saturation flow rate [veh/h]	3101	4567	3101	4567	1425	3101	4567	3101	4567	1425
c, Capacity [veh/h]	487	2290	213	1886	589	310	658	532	985	307
d1, Uniform Delay [s]	28.41	14.24	30.65	18.39	13.18	29.90	27.61	28.36	24.70	22.63
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.99	2.66	0.29	4.51	0.79	1.33	0.58	5.42	0.58	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

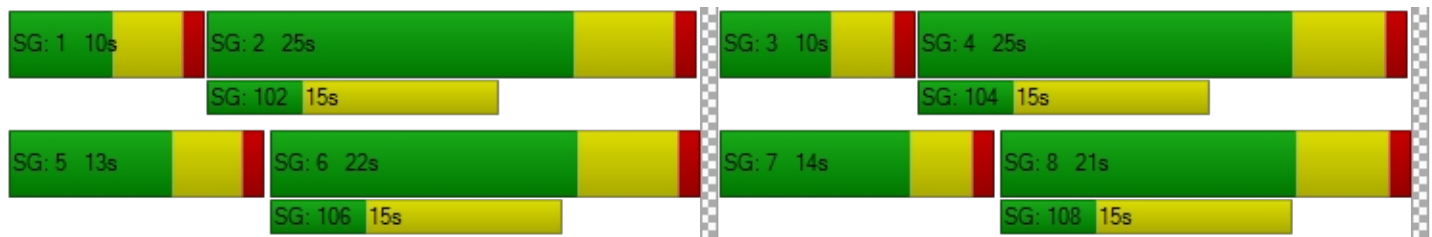
X, volume / capacity	0.79	0.78	0.14	0.83	0.21	0.52	0.50	0.89	0.59	0.22
d, Delay for Lane Group [s/veh]	31.40	16.90	30.93	22.90	13.97	31.23	28.19	33.79	25.28	22.99
Lane Group LOS	C	B	C	C	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	3.09	6.71	0.22	7.05	1.17	1.23	1.57	3.91	2.67	0.88
50th-Percentile Queue Length [ft]	77.19	167.81	5.54	176.21	29.13	30.83	39.17	97.76	66.85	21.98
95th-Percentile Queue Length [veh]	5.56	10.96	0.40	11.40	2.10	2.22	2.82	7.04	4.81	1.58
95th-Percentile Queue Length [ft]	138.94	274.04	9.97	285.05	52.44	55.49	70.51	175.97	120.32	39.57

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.40	16.90	0.00	30.93	22.90	13.97	31.23	28.19	0.00	33.79	25.28	22.99
Movement LOS	C	B		C	C	B	C	C		C	C	C
d_A, Approach Delay [s/veh]	19.49			22.41			29.19			28.71		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	23.15											
Intersection LOS	C											
Intersection V/C	0.693											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.861

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	240.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	106	428	253	95	173	24	24	261	60	133	398	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.12	1.12	1.12	0.72	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	38	431	164	103	368	72	170	1217	1	384	676	58
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	859	417	198	541	96	197	1509	68	480	963	183
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	226	110	52	142	25	52	397	18	126	253	48
Total Analysis Volume [veh/h]	152	904	439	208	569	101	207	1588	72	505	1014	193
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	3
Auxiliary Signal Groups			2,7			3,6			5,8			3,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	11	29	18	10	28	11	11	33	11	18	40	11
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	8	27	45	8	27	38	9	31	41	16	38	49
g / C, Green / Cycle	0.08	0.30	0.50	0.09	0.31	0.43	0.10	0.34	0.45	0.18	0.42	0.54
(v / s)_i Volume / Saturation Flow Rate	0.05	0.28	0.31	0.07	0.12	0.07	0.08	0.35	0.05	0.16	0.22	0.14
s, saturation flow rate [veh/h]	3101	3192	1425	3101	4567	1425	2467	4567	1425	3101	4567	1425
c, Capacity [veh/h]	262	958	678	276	1390	573	299	1573	608	551	1928	716
d1, Uniform Delay [s]	39.67	30.76	17.89	40.04	24.87	17.31	40.78	29.50	15.58	36.34	19.31	12.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.03	18.34	4.74	4.18	0.89	0.15	2.85	12.96	0.09	6.56	0.22	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

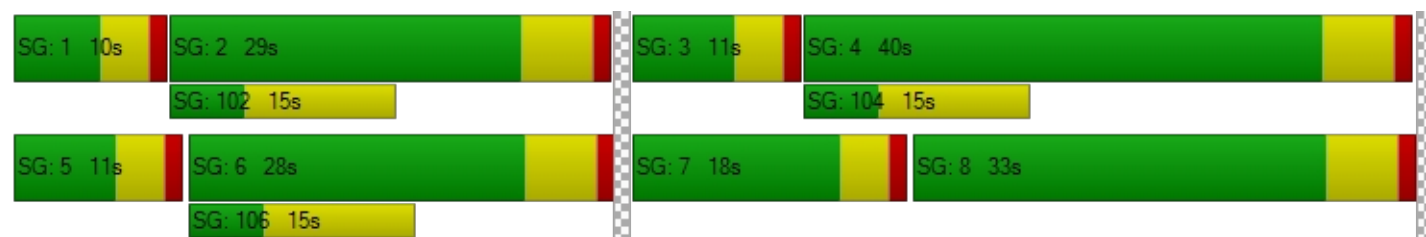
X, volume / capacity	0.58	0.94	0.65	0.75	0.41	0.18	0.69	1.01	0.12	0.92	0.53	0.27
d, Delay for Lane Group [s/veh]	41.70	49.11	22.63	44.22	25.76	17.45	43.63	42.46	15.66	42.91	19.53	13.10
Lane Group LOS	D	D	C	D	C	B	D	F	B	D	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.64	11.37	7.09	2.33	3.15	1.28	2.31	12.33	0.85	5.70	4.87	2.07
50th-Percentile Queue Length [ft]	40.96	284.26	177.34	58.18	78.85	32.05	57.87	308.16	21.25	142.40	121.64	51.82
95th-Percentile Queue Length [veh]	2.95	16.90	11.46	4.19	5.68	2.31	4.17	18.20	1.53	9.61	8.48	3.73
95th-Percentile Queue Length [ft]	73.73	422.51	286.54	104.73	141.93	57.70	104.17	454.88	38.26	240.25	212.07	93.28

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	41.70	49.11	22.63	44.22	25.76	17.45	43.63	42.46	15.66	42.91	19.53	13.10
Movement LOS	D	D	C	D	C	B	D	F	B	D	B	B
d_A, Approach Delay [s/veh]	40.58			29.18			41.56			25.70		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	34.93											
Intersection LOS	C											
Intersection V/C	0.861											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				⇐⇐⇐			⇐⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	0	0	0	263	0	470	0	425	141	0	338	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.72	1.00	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	1207	0	1399	320	0	797	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	263	0	1677	0	1705	422	0	1040	60
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	69	0	441	0	449	111	0	274	16
Total Analysis Volume [veh/h]	0	0	0	277	0	1765	0	1795	444	0	1095	63
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal group	0	0	0	1	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	4.4	0.0	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	36	0	0	0	31	0	0	24	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	10	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group		L	C	C
C, Cycle Length [s]		60	60	60
L, Total Lost Time per Cycle [s]		2.00	0.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		1.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	0.00	1.00
g_i, Effective Green Time [s]		34	0	22
g / C, Green / Cycle		0.57	0.00	0.37
(v / s)_i Volume / Saturation Flow Rate		0.61	0.39	0.34
s, saturation flow rate [veh/h]		458	4567	3192
c, Capacity [veh/h]		309	0	1170
d1, Uniform Delay [s]		21.56	0.00	18.32
k, delay calibration		0.15	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00
d2, Incremental Delay [s]		12.23	0.00	14.79
d3, Initial Queue Delay [s]		0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity		0.90	0.00	0.94
d, Delay for Lane Group [s/veh]		33.79	0.00	33.11
Lane Group LOS		C	A	C
Critical Lane Group		Yes	No	Yes
50th-Percentile Queue Length [veh]		2.43	0.00	8.80
50th-Percentile Queue Length [ft]		60.84	0.00	219.93
95th-Percentile Queue Length [veh]		4.38	0.00	13.66
95th-Percentile Queue Length [ft]		109.51	0.00	341.54

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	33.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.11	0.00
Movement LOS				C					A			C	
d_A, Approach Delay [s/veh]	0.00			33.79			0.00			33.11			
Approach LOS	A			C			A			C			
d_I, Intersection Delay [s/veh]	14.40												
Intersection LOS	B												
Intersection V/C	0.948												

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.433

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	180	149	300	385	322	244
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	0.72	0.72	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	292	0	443	902	0	505
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	472	149	659	1179	232	681
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	124	39	173	310	61	179
Total Analysis Volume [veh/h]	497	157	694	1241	244	717
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	35	0	45	35	0	45
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	33	33	33	43	78	43	43
g / C, Green / Cycle	0.41	0.41	0.41	0.54	0.98	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.16	0.16	0.11	0.15	0.87	0.19	0.16
s, saturation flow rate [veh/h]	1597	1597	1425	4567	1425	1306	4567
c, Capacity [veh/h]	656	656	586	2461	1322	674	2461
d1, Uniform Delay [s]	16.43	16.43	15.59	10.03	1.63	15.02	10.09
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	0.36	0.24	0.29	13.91	1.50	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

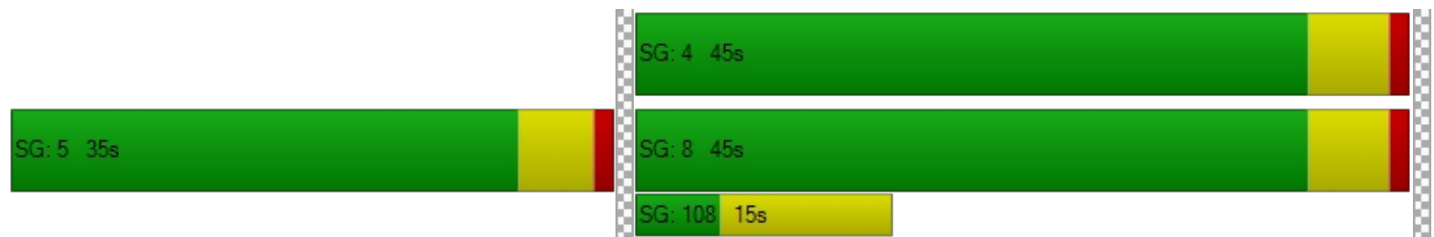
X, volume / capacity	0.38	0.38	0.27	0.28	0.94	0.36	0.29
d, Delay for Lane Group [s/veh]	16.79	16.79	15.83	10.32	15.53	16.52	10.39
Lane Group LOS	B	B	B	B	B	B	B
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.06	3.06	1.84	2.08	5.11	1.55	2.16
50th-Percentile Queue Length [ft]	76.59	76.59	45.92	51.95	127.64	38.81	54.01
95th-Percentile Queue Length [veh]	5.51	5.51	3.31	3.74	8.81	2.79	3.89
95th-Percentile Queue Length [ft]	137.87	137.87	82.66	93.52	220.28	69.86	97.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.79	15.83	10.32	15.53	16.52	10.39
Movement LOS	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	16.56		13.66		11.95	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	13.73					
Intersection LOS	B					
Intersection V/C	0.433					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	12.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	156	877	3	8	803	35	56	12	125	5	48	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	15	205	0	24	813	0	0	4	53	0	8	51
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	1424	4	35	1929	49	56	16	178	5	56	61
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	375	1	9	508	13	15	4	47	1	15	16
Total Analysis Volume [veh/h]	244	1499	4	37	2031	52	59	17	187	5	59	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	14	23	0	16	25	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	12	37	37	5	30	30	12	12	12	12	12	12
g / C, Green / Cycle	0.20	0.62	0.62	0.08	0.50	0.50	0.20	0.20	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.15	0.24	0.24	0.02	0.34	0.34	0.05	0.01	0.13	0.00	0.04	0.04
s, saturation flow rate [veh/h]	1597	4567	1674	1597	4567	1649	1137	1676	1482	1056	1676	1425
c, Capacity [veh/h]	313	2837	1040	124	2297	829	293	338	298	199	338	287
d1, Uniform Delay [s]	22.90	5.67	5.67	26.14	11.15	11.15	22.75	19.33	21.90	25.78	19.83	20.04
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.24	0.40	1.09	1.34	1.55	4.22	0.33	0.06	2.16	0.05	0.24	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

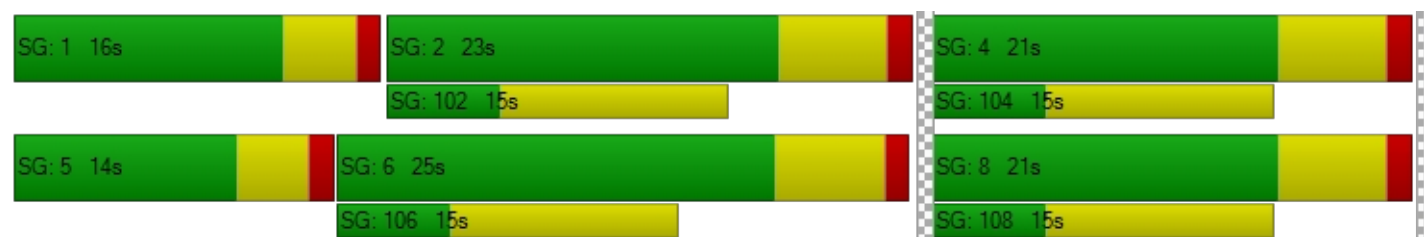
X, volume / capacity	0.78	0.39	0.39	0.30	0.67	0.67	0.20	0.05	0.63	0.03	0.17	0.22
d, Delay for Lane Group [s/veh]	27.15	6.07	6.76	27.47	12.70	15.37	23.09	19.39	24.06	25.83	20.08	20.42
Lane Group LOS	C	A	A	C	B	B	C	B	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	3.40	1.75	2.12	0.50	4.12	5.08	0.70	0.18	2.31	0.06	0.63	0.70
50th-Percentile Queue Length [ft]	84.96	43.71	53.05	12.57	102.99	126.96	17.49	4.43	57.87	1.59	15.83	17.49
95th-Percentile Queue Length [veh]	6.12	3.15	3.82	0.90	7.41	8.77	1.26	0.32	4.17	0.11	1.14	1.26
95th-Percentile Queue Length [ft]	152.93	78.68	95.48	22.62	185.37	219.35	31.48	7.97	104.17	2.86	28.49	31.49

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.15	6.26	6.76	27.47	13.36	15.37	23.09	19.39	24.06	25.83	20.08	20.42
Movement LOS	C	A	A	C	B	B	C	B	C	C	C	C
d_A, Approach Delay [s/veh]	9.18			13.65			23.54			20.48		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	12.63											
Intersection LOS	B											
Intersection V/C	0.614											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	6.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.110

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	30	205	2	3	149	23	12	3	10	1	8	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	29	0	0	82	0	0	28	0	32	59	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	234	2	3	231	23	12	31	10	33	67	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	62	1	1	61	6	3	8	3	9	18	1
Total Analysis Volume [veh/h]	43	246	2	3	243	24	13	33	11	35	71	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	44	44	44	44	44	44	12	12	12	12	12	12
g / C, Green / Cycle	0.73	0.73	0.73	0.73	0.73	0.73	0.20	0.20	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.07	0.00	0.08	0.08	0.01	0.01	0.01	0.03	0.02	0.02
s, saturation flow rate [veh/h]	997	1676	1672	1014	1676	1625	1189	1676	1540	1221	1676	1660
c, Capacity [veh/h]	811	1229	1226	825	1229	1191	317	335	308	330	335	332
d1, Uniform Delay [s]	2.96	2.30	2.30	2.79	2.32	2.32	21.13	19.46	19.48	21.18	19.63	19.63
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	0.16	0.17	0.01	0.18	0.19	0.24	0.38	0.45	0.65	0.66	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.05	0.10	0.10	0.00	0.11	0.11	0.04	0.07	0.07	0.11	0.11	0.11
d, Delay for Lane Group [s/veh]	3.08	2.47	2.47	2.80	2.50	2.51	21.37	19.84	19.92	21.83	20.28	20.30
Lane Group LOS	A	A	A	A	A	A	C	B	B	C	C	C
Critical Lane Group	No	No	No	No	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.11	0.20	0.20	0.01	0.22	0.22	0.16	0.26	0.26	0.44	0.43	0.43
50th-Percentile Queue Length [ft]	2.70	5.11	5.11	0.18	5.58	5.55	4.01	6.48	6.50	10.91	10.86	10.86
95th-Percentile Queue Length [veh]	0.19	0.37	0.37	0.01	0.40	0.40	0.29	0.47	0.47	0.79	0.78	0.78
95th-Percentile Queue Length [ft]	4.86	9.20	9.19	0.32	10.05	10.00	7.22	11.67	11.71	19.64	19.55	19.54

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	3.08	2.47	2.47	2.80	2.50	2.51	21.37	19.86	19.92	21.83	20.29	20.30
Movement LOS	A	A	A	A	A	A	C	B	B	C	C	C
d_A, Approach Delay [s/veh]	2.56			2.51			20.22			20.79		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	6.64											
Intersection LOS	A											
Intersection V/C	0.110											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

**Intersection Setup**

Name	Eucalyptus Ave					
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↩↪		↩		↩	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Eucalyptus Ave					
Base Volume Input [veh/h]	14	1	3	10	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	60	0	0	70
Total Hourly Volume [veh/h]	14	1	63	10	0	73
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	17	3	0	19
Total Analysis Volume [veh/h]	15	1	66	11	0	77
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.37	8.66	0.00	0.00	7.52	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.05	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	1.36	0.08	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.32		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.88					
Intersection LOS	A					



**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	25.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.887

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	0	0	0	1	0	1
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	14	834	97	126	743	45	4	5	5	185	53	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	58	428	640	226	0	0	0	0	104	0	160
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	1217	563	815	1259	63	4	5	5	289	53	364
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	320	148	214	331	17	1	1	1	76	14	96
Total Analysis Volume [veh/h]	20	1281	593	858	1325	66	4	5	5	304	56	383
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	19	47	0	31	59	0	0	22	0	0	22	31
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	4	45	45	29	70	70	20	20	20	51
g / C, Green / Cycle	0.04	0.45	0.45	0.29	0.70	0.70	0.20	0.20	0.20	0.51
(v / s)_i Volume / Saturation Flow Rate	0.01	0.28	0.42	0.28	0.22	0.22	0.01	0.12	0.03	0.27
s, saturation flow rate [veh/h]	1597	4567	1425	3101	4567	1625	1523	2445	1676	1425
c, Capacity [veh/h]	72	2055	641	899	3173	1129	351	520	335	695
d1, Uniform Delay [s]	46.15	21.02	25.91	34.85	6.01	6.01	32.28	38.10	33.11	17.92
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.37
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.04	1.44	21.21	6.78	0.27	0.76	0.05	1.05	0.23	2.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

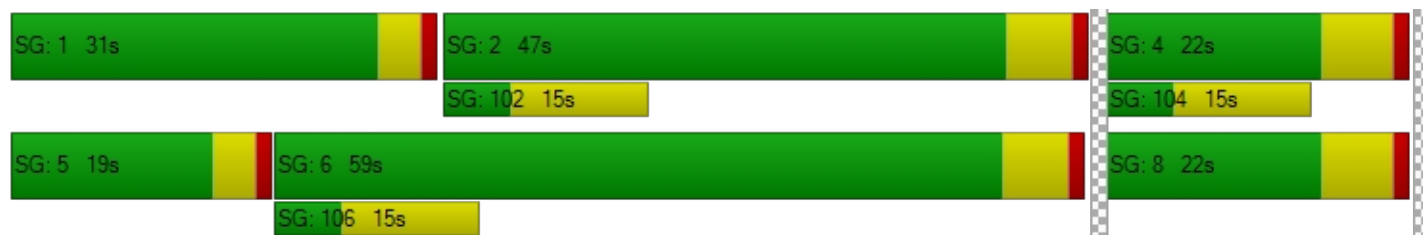
X, volume / capacity	0.28	0.62	0.92	0.95	0.32	0.32	0.04	0.58	0.17	0.55
d, Delay for Lane Group [s/veh]	48.19	22.46	47.12	41.63	6.28	6.77	32.32	39.15	33.34	20.27
Lane Group LOS	D	C	D	D	A	A	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.51	7.36	15.91	10.56	2.34	2.65	0.27	3.51	1.14	6.39
50th-Percentile Queue Length [ft]	12.78	183.99	397.63	264.12	58.38	66.21	6.78	87.84	28.55	159.81
95th-Percentile Queue Length [veh]	0.92	11.81	22.45	15.90	4.20	4.77	0.49	6.32	2.06	10.54
95th-Percentile Queue Length [ft]	23.00	295.22	561.14	397.38	105.09	119.18	12.20	158.11	51.39	263.47

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	48.19	22.46	47.12	41.63	6.39	6.77	32.32	32.32	32.32	39.15	33.34	20.27
Movement LOS	D	C	D	D	A	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	30.45			19.85			32.32			28.98		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	25.37											
Intersection LOS	C											
Intersection V/C	0.887											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	6.7
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.507

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Approach	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Lane Configuration	+			T			T			T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Base Volume Input [veh/h]	0	0	0	71	0	84	52	119	0	0	379	177
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	6	0	84	13	26	11	1084	0	0	297	25
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	6	0	155	13	110	63	1203	0	0	676	202
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	41	3	29	17	317	0	0	178	53
Total Analysis Volume [veh/h]	0	6	0	163	14	116	66	1266	0	0	712	213
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	44	0	0	44	0	0	16	0	0	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	12	12	12	12	44	44	44	44	44	44
g / C, Green / Cycle	0.20	0.20	0.20	0.20	0.74	0.74	0.74	0.74	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.00	0.13	0.01	0.09	0.12	0.38	0.38	0.00	0.29	0.29
s, saturation flow rate [veh/h]	1487	1264	1487	1264	542	1676	1676	348	1676	1546
c, Capacity [veh/h]	356	365	296	251	420	1231	1231	292	1231	1135
d1, Uniform Delay [s]	19.33	22.37	19.43	21.20	6.82	3.40	3.40	0.00	2.97	2.97
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	0.86	0.07	1.32	0.80	1.54	1.54	0.00	0.94	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.02	0.45	0.05	0.46	0.16	0.51	0.51	0.00	0.39	0.39
d, Delay for Lane Group [s/veh]	19.35	23.23	19.50	22.51	7.62	4.94	4.94	0.00	3.90	3.98
Lane Group LOS	B	C	B	C	A	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	0.06	1.98	0.15	1.37	0.40	1.61	1.61	0.00	1.04	0.98
50th-Percentile Queue Length [ft]	1.56	49.52	3.68	34.36	10.00	40.17	40.17	0.00	25.94	24.54
95th-Percentile Queue Length [veh]	0.11	3.57	0.27	2.47	0.72	2.89	2.89	0.00	1.87	1.77
95th-Percentile Queue Length [ft]	2.80	89.13	6.63	61.84	18.00	72.31	72.31	0.00	46.69	44.18

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	19.35	19.35	19.35	23.23	19.50	22.51	7.62	4.94	4.94	0.00	3.93	3.98
Movement LOS	B	B	B	C	B	C	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	19.35			22.77			5.07			3.94		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	6.72											
Intersection LOS	A											
Intersection V/C	0.507											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	6.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	22	1	5	4	0	0	0	179	22	14	490	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	39	0	132	0	0	0	0	160	98	362	262	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	1	137	4	0	0	0	339	120	376	752	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	0	36	1	0	0	0	89	32	99	198	2
Total Analysis Volume [veh/h]	64	1	144	4	0	0	0	357	126	396	792	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	34	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	10	10	10	10	10	46	46	46	46	46	46
g / C, Green / Cycle	0.17	0.17	0.17	0.17	0.17	0.17	0.76	0.76	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.05	0.00	0.10	0.00	0.00	0.00	0.00	0.15	0.15	0.48	0.24	0.24
s, saturation flow rate [veh/h]	1270	1676	1425	1114	1676	1676	610	1676	1531	818	1676	1672
c, Capacity [veh/h]	330	292	248	211	292	292	513	1273	1162	676	1273	1270
d1, Uniform Delay [s]	22.01	20.48	22.77	25.40	0.00	0.00	0.00	2.04	2.05	5.96	2.28	2.28
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	0.00	2.15	0.04	0.00	0.00	0.00	0.34	0.39	3.69	0.65	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.19	0.00	0.58	0.02	0.00	0.00	0.00	0.20	0.20	0.59	0.31	0.31
d, Delay for Lane Group [s/veh]	22.29	20.48	24.91	25.44	0.00	0.00	0.00	2.39	2.44	9.66	2.93	2.93
Lane Group LOS	C	C	C	C	A	A	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.74	0.01	1.82	0.05	0.00	0.00	0.00	0.31	0.30	2.21	0.57	0.57
50th-Percentile Queue Length [ft]	18.51	0.27	45.56	1.26	0.00	0.00	0.00	7.80	7.59	55.20	14.20	14.18
95th-Percentile Queue Length [veh]	1.33	0.02	3.28	0.09	0.00	0.00	0.00	0.56	0.55	3.97	1.02	1.02
95th-Percentile Queue Length [ft]	33.31	0.49	82.02	2.26	0.00	0.00	0.00	14.04	13.66	99.36	25.56	25.52

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	22.29	20.48	24.91	25.44	0.00	0.00	0.00	2.40	2.44	9.66	2.93	2.93
Movement LOS	C	C	C	C	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	24.09			25.44			2.41			5.16		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	6.59											
Intersection LOS	A											
Intersection V/C	0.585											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merill Ave**

Control Type:	Signalized	Delay (sec / veh):	28.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.831

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Merill Ave			Merill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	70.00	100.00	70.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Merill Ave			Merill Ave		
Base Volume Input [veh/h]	335	1158	55	44	381	138	107	11	65	34	34	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	313	881	2	85	1363	596	211	50	137	7	105	44
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	574	1784	45	119	1660	704	318	61	202	41	139	109
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	151	469	12	31	437	185	84	16	53	11	37	29
Total Analysis Volume [veh/h]	604	1878	47	125	1747	741	335	64	213	43	146	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.6	5.2	3.2	3.6	5.2	3.2	3.2	4.8	3.6	3.2	4.8	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	19	37	22	10	28	12	12	11	19	22	21	10
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	17	44	51	7	34	46	10	16	5	11	11
g / C, Green / Cycle	0.21	0.54	0.64	0.09	0.42	0.57	0.13	0.20	0.07	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.19	0.41	0.03	0.04	0.38	0.52	0.11	0.02	0.01	0.05	0.08
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	3101	3192	1425
c, Capacity [veh/h]	659	2483	867	283	1929	776	388	631	209	448	200
d1, Uniform Delay [s]	30.81	14.15	6.34	34.43	21.62	17.27	34.33	26.27	35.28	30.99	32.17
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.64	2.21	0.12	1.09	7.61	22.93	5.83	0.07	0.48	0.42	2.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.92	0.76	0.05	0.44	0.91	0.95	0.86	0.10	0.21	0.33	0.58
d, Delay for Lane Group [s/veh]	36.45	16.36	6.46	35.51	29.23	40.20	40.17	26.34	35.76	31.41	34.77
Lane Group LOS	D	B	A	D	C	D	D	C	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	5.83	7.74	0.29	1.14	10.31	15.40	3.34	0.48	0.39	1.23	2.12
50th-Percentile Queue Length [ft]	145.71	193.40	7.24	28.51	257.87	385.04	83.47	11.97	9.83	30.82	52.95
95th-Percentile Queue Length [veh]	9.79	12.30	0.52	2.05	15.58	21.84	6.01	0.86	0.71	2.22	3.81
95th-Percentile Queue Length [ft]	244.69	307.43	13.04	51.33	389.54	545.94	150.24	21.55	17.70	55.48	95.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	36.45	16.36	6.46	35.51	29.23	40.20	40.17	26.34	0.00	35.76	31.41	34.77
Movement LOS	D	B	A	D	C	D	D	C		D	C	C
d_A, Approach Delay [s/veh]	20.97			32.64			37.95			33.30		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	27.99											
Intersection LOS	C											
Intersection V/C	0.831											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	31.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.914

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↔		↔		↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	2	0	1	1
Pocket Length [ft]	100.00	350.00	250.00	100.00	200.00	100.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	651	118	154	311	260	901
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.55	0.55	0.55	0.55	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	651	258	465	864	350	527
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1009	323	550	1035	610	1428
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	266	85	145	272	161	376
Total Analysis Volume [veh/h]	1062	340	579	1089	642	1503
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	7	1	6	7	4
Auxiliary Signal Groups		2,7				1
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	5.2	3.6	3.2	4.8	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	23	49	18	41	49	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	21	70	16	39	47	47
g / C, Green / Cycle	0.23	0.78	0.18	0.43	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.21	0.21	0.17	0.21	0.19	0.54
s, saturation flow rate [veh/h]	5074	1583	3445	5074	3445	2803
c, Capacity [veh/h]	1184	1186	612	2199	1799	1464
d1, Uniform Delay [s]	33.45	3.61	36.57	18.40	12.62	21.50
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.75	0.61	8.23	0.80	0.12	19.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

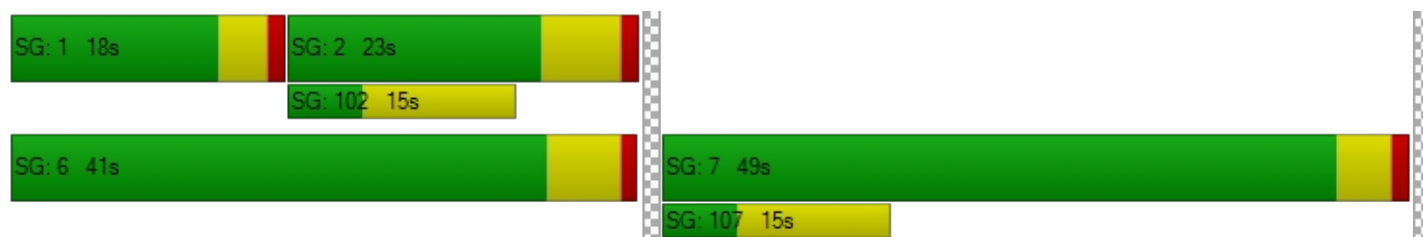
X, volume / capacity	0.90	0.29	0.95	0.50	0.36	1.03
d, Delay for Lane Group [s/veh]	44.20	4.22	44.80	19.20	12.74	40.89
Lane Group LOS	D	A	D	B	B	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	8.06	1.28	6.53	4.96	3.43	17.12
50th-Percentile Queue Length [ft]	201.53	31.91	163.33	123.94	85.64	428.10
95th-Percentile Queue Length [veh]	12.72	2.30	10.72	8.61	6.17	24.40
95th-Percentile Queue Length [ft]	317.93	57.45	268.12	215.23	154.15	610.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.20	4.22	44.80	19.20	12.74	40.89
Movement LOS	D	A	D	B	B	F
d_A, Approach Delay [s/veh]	34.50		28.08		32.47	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	31.61					
Intersection LOS	C					
Intersection V/C	0.914					

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	52.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.988

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	200.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	165	393	406	300	299	111	163	741	40	258	458	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.47	0.47	0.47	0.47
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	169	242	0	155	192	196	124	806	73	0	2275	61
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	334	635	406	455	491	307	201	1154	92	121	2490	94
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	167	107	120	129	81	53	304	24	32	655	25
Total Analysis Volume [veh/h]	352	668	427	479	517	323	212	1215	97	127	2621	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	16	21	26	19	24	10	10	44	16	26	60	19
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	14	19	44	17	22	32	8	43	59	23	58	77
g / C, Green / Cycle	0.13	0.17	0.40	0.15	0.20	0.29	0.07	0.39	0.54	0.21	0.53	0.70
(v / s)_i Volume / Saturation Flow Rate	0.11	0.15	0.30	0.15	0.11	0.23	0.07	0.27	0.07	0.04	0.57	0.07
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	395	790	543	479	915	387	226	1780	734	651	2406	969
d1, Uniform Delay [s]	47.26	44.06	30.09	46.50	39.66	37.77	50.76	27.90	13.86	35.81	26.02	6.07
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.33	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.09	10.78	10.96	19.00	2.52	13.14	16.66	0.47	0.08	0.14	42.04	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

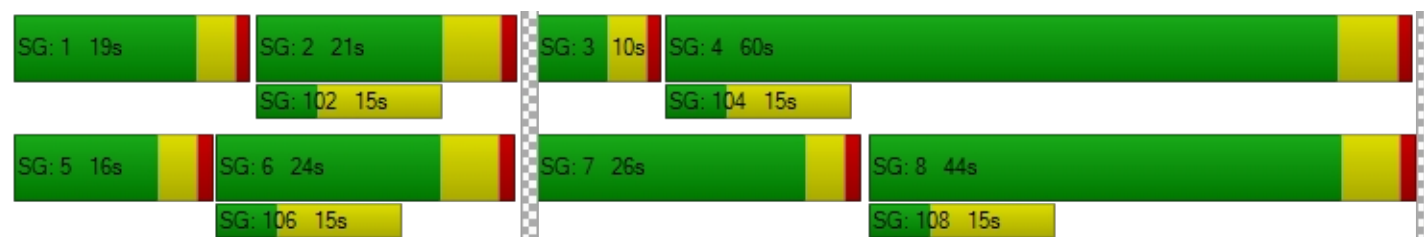
X, volume / capacity	0.89	0.85	0.79	1.00	0.57	0.84	0.94	0.68	0.13	0.20	1.09	0.10
d, Delay for Lane Group [s/veh]	54.35	54.83	41.05	65.49	42.19	50.91	67.42	28.37	13.94	35.96	68.06	6.11
Lane Group LOS	D	D	D	E	D	D	E	C	B	D	F	A
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	5.02	6.51	11.16	7.64	4.31	9.32	3.37	8.51	1.21	1.39	28.21	0.70
50th-Percentile Queue Length [ft]	125.51	162.74	279.02	190.91	107.87	232.99	84.15	212.80	30.21	34.80	705.20	17.45
95th-Percentile Queue Length [veh]	8.70	10.69	16.64	12.17	7.72	14.33	6.06	13.30	2.18	2.51	39.44	1.26
95th-Percentile Queue Length [ft]	217.38	267.35	416.00	304.22	193.03	358.16	151.47	332.42	54.38	62.63	986.00	31.41

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	54.35	54.83	41.05	65.49	42.19	50.91	67.42	28.37	13.94	35.96	68.06	6.11
Movement LOS	D	D	D	E	D	D	E	C	B	D	F	A
d_A, Approach Delay [s/veh]	50.65			52.79			32.88			64.47		
Approach LOS	D			D			C			E		
d_I, Intersection Delay [s/veh]	52.76											
Intersection LOS	D											
Intersection V/C	0.988											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	250.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.647

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	152	0	393	0	994	478	557	578	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.80	0.80	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	2451	0	721	378	0	1494	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	152	0	2844	0	1188	603	446	1956	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	40	0	748	0	313	159	117	515	0
Total Analysis Volume [veh/h]	0	0	0	160	0	2994	0	1251	635	469	2059	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0	
Auxiliary Signal Groups													
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-	
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0	
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0	
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0	
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
Split [s]	0	0	0	0	73	0	0	34	0	13	47	0	
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0	
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0	
Rest In Walk					No			No			No		
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
Minimum Recall					No			No		No	No		
Maximum Recall					No			No		No	No		
Pedestrian Recall					No			No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		71	71	71	32	32	11	45
g / C, Green / Cycle		0.59	0.59	0.59	0.27	0.27	0.09	0.38
(v / s)_i Volume / Saturation Flow Rate		0.10	1.05	1.05	0.27	0.45	0.15	0.45
s, saturation flow rate [veh/h]		1597	1425	1425	4567	1425	3101	4567
c, Capacity [veh/h]		945	843	843	1218	380	284	1713
d1, Uniform Delay [s]		11.12	24.50	24.50	44.00	44.00	54.50	37.50
k, delay calibration		0.11	0.50	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.08	353.81	353.81	32.99	313.34	295.97	96.91
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity		0.17	1.78	1.78	1.03	1.67	1.65	1.20
d, Delay for Lane Group [s/veh]		11.20	378.31	378.31	76.99	357.34	350.47	134.41
Lane Group LOS		B	F	F	F	F	F	F
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		1.85	104.08	104.08	15.40	44.01	15.90	31.35
50th-Percentile Queue Length [ft]		46.22	2601.90	2601.90	385.07	1100.30	397.47	783.67
95th-Percentile Queue Length [veh]		3.33	167.40	167.40	22.20	69.09	25.99	45.63
95th-Percentile Queue Length [ft]		83.20	4185.11	4185.11	554.91	1727.33	649.74	1140.70

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	11.20	378.31	378.31	0.00	76.99	357.34	350.47	134.41	0.00
Movement LOS				B	F	F		F	F	F	F	
d_A, Approach Delay [s/veh]	0.00			359.69			171.38			174.50		
Approach LOS	A			F			F			F		
d_I, Intersection Delay [s/veh]	250.90											
Intersection LOS	F											
Intersection V/C	1.647											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	155.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.269

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↑↵						↵↑↑			↑↑↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	208	0	295	0	0	0	701	441	0	0	915	312
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	1.00	1.00	0.80	0.80
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1456	0	0	0	0	0	576	400	0	0	718	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1664	0	295	0	0	0	1137	753	0	0	1450	250
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	438	0	78	0	0	0	299	198	0	0	382	66
Total Analysis Volume [veh/h]	1752	0	311	0	0	0	1197	793	0	0	1526	263
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	42	0	0	0	0	31	58	0	0	27	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	100	100	100		100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	40	40	40		29	56	25	25
g / C, Green / Cycle	0.40	0.40	0.40		0.29	0.56	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.55	0.55	0.22		0.39	0.17	0.33	0.18
s, saturation flow rate [veh/h]	1597	1597	1425		3101	4567	4567	1425
c, Capacity [veh/h]	639	639	570		899	2557	1142	356
d1, Uniform Delay [s]	30.00	30.00	23.03		35.50	11.71	37.50	34.49
k, delay calibration	0.50	0.50	0.50		0.19	0.11	0.11	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	177.06	177.06	3.72		152.02	0.07	152.82	4.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

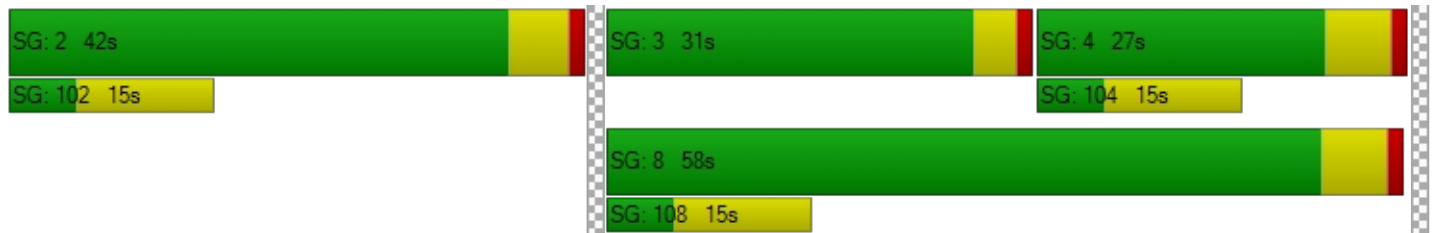
X, volume / capacity	1.37	1.37	0.55		1.33	0.31	1.34	0.74
d, Delay for Lane Group [s/veh]	207.06	207.06	26.75		187.52	11.78	190.32	39.10
Lane Group LOS	F	F	C		F	B	F	D
Critical Lane Group	Yes	No	No		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	45.60	45.60	5.89		29.36	2.86	25.03	6.10
50th-Percentile Queue Length [ft]	1139.97	1139.97	147.31		734.01	71.45	625.82	152.48
95th-Percentile Queue Length [veh]	68.61	68.61	9.87		44.63	5.14	38.48	10.15
95th-Percentile Queue Length [ft]	1715.36	1715.36	246.83		1115.83	128.62	962.06	253.74

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	207.06	207.06	26.75	0.00	0.00	0.00	187.52	11.78	0.00	0.00	190.32	39.10
Movement LOS	F	F	C				F	B			F	D
d_A, Approach Delay [s/veh]	179.88			0.00			117.49			168.09		
Approach LOS	F			A			F			F		
d_I, Intersection Delay [s/veh]	155.02											
Intersection LOS	F											
Intersection V/C	1.269											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	52	628	17	159	528	235	62	173	22	19	703	239
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	121	144	305	49	8	50	113	0	38	32	68
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	994	168	526	783	335	112	286	22	57	735	307
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	262	44	138	206	88	29	75	6	15	193	81
Total Analysis Volume [veh/h]	76	1046	177	554	824	353	118	301	23	60	774	323
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	22	0	17	29	10	10	21	0	10	21	17
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	20	20	15	29	39	8	21	21	6	19	36
g / C, Green / Cycle	0.09	0.29	0.29	0.21	0.41	0.56	0.11	0.30	0.30	0.08	0.27	0.51
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.14	0.20	0.20	0.28	0.04	0.11	0.02	0.02	0.27	0.26
s, saturation flow rate [veh/h]	2750	4050	1264	2750	4050	1264	2750	2831	1264	2750	2831	1264
c, Capacity [veh/h]	243	1157	361	589	1668	661	314	858	383	227	768	610
d1, Uniform Delay [s]	29.92	24.07	20.77	27.06	15.21	11.04	28.69	19.03	17.32	30.11	25.50	12.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.20	0.11	0.11	0.11	0.11	0.11	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.73	11.54	4.70	7.99	1.05	1.21	0.74	0.24	0.06	0.61	16.85	1.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

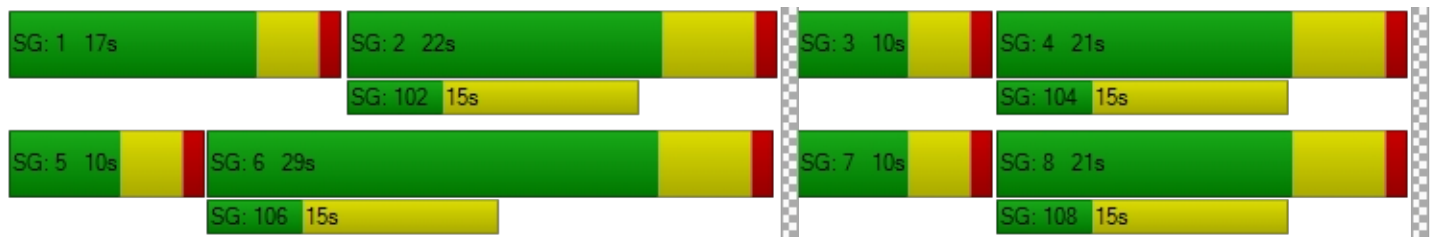
X, volume / capacity	0.31	0.90	0.49	0.94	0.49	0.53	0.38	0.35	0.06	0.26	1.01	0.53
d, Delay for Lane Group [s/veh]	30.65	35.62	25.46	35.04	16.26	12.25	29.43	19.27	17.38	30.72	42.35	13.59
Lane Group LOS	C	D	C	D	B	B	C	B	B	C	F	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.59	6.20	2.64	4.95	3.11	3.34	0.89	1.75	0.25	0.46	7.51	3.09
50th-Percentile Queue Length [ft]	14.69	154.91	66.07	123.82	77.65	83.57	22.21	43.65	6.14	11.61	187.74	77.18
95th-Percentile Queue Length [veh]	1.06	10.28	4.76	8.60	5.59	6.02	1.60	3.14	0.44	0.84	12.05	5.56
95th-Percentile Queue Length [ft]	26.44	256.97	118.92	215.06	139.77	150.42	39.97	78.57	11.06	20.91	301.28	138.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.65	35.62	25.46	35.04	16.26	12.25	29.43	19.27	17.38	30.72	42.35	13.59
Movement LOS	C	D	C	D	B	B	C	B	B	C	F	B
d_A, Approach Delay [s/veh]	33.94			21.45			21.89			33.72		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.07											
Intersection LOS	C											
Intersection V/C	0.776											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.636

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	2	2	0	1	2	0	0	2	0	1
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	23	493	478	56	542	19	2	151	18	893	201	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	203	153	0	81	0	0	0	0	35	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	888	817	78	834	26	2	151	18	928	201	23
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	234	215	21	219	7	1	40	5	244	53	6
Total Analysis Volume [veh/h]	34	935	860	82	878	27	2	159	19	977	212	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	28	10	21	0	10	21	0	28	39	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	31	59	6	32	32	2	9	26	32
g / C, Green / Cycle	0.06	0.39	0.74	0.08	0.41	0.41	0.03	0.11	0.33	0.40
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.35	0.03	0.15	0.02	0.00	0.05	0.32	0.05
s, saturation flow rate [veh/h]	1573	6001	2486	3056	6001	1404	3056	3146	3056	4501
c, Capacity [veh/h]	96	2315	1761	245	2429	569	94	343	993	1816
d1, Uniform Delay [s]	36.05	17.88	5.21	34.79	16.60	14.45	37.60	33.43	26.79	14.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.21	0.53	0.97	0.80	0.42	0.16	0.09	0.97	10.01	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

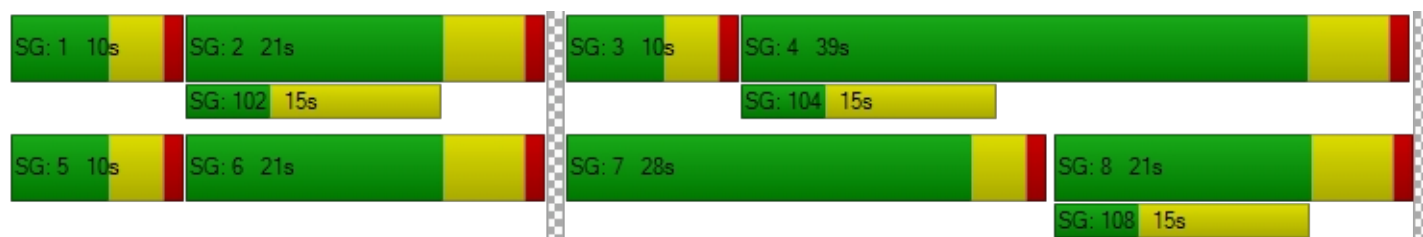
X, volume / capacity	0.35	0.40	0.49	0.34	0.36	0.05	0.02	0.46	0.98	0.12
d, Delay for Lane Group [s/veh]	38.26	18.40	6.18	35.59	17.01	14.60	37.69	34.40	36.80	14.97
Lane Group LOS	D	B	A	D	B	B	D	C	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.67	2.94	2.30	0.75	2.61	0.30	0.02	1.43	9.76	0.74
50th-Percentile Queue Length [ft]	16.70	73.41	57.43	18.70	65.23	7.42	0.48	35.63	243.89	18.52
95th-Percentile Queue Length [veh]	1.20	5.29	4.13	1.35	4.70	0.53	0.03	2.57	14.88	1.33
95th-Percentile Queue Length [ft]	30.07	132.13	103.37	33.66	117.41	13.35	0.87	64.14	371.95	33.34

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	38.26	18.40	6.18	35.59	17.01	14.60	37.69	34.40	0.00	36.80	14.97	0.00
Movement LOS	D	B	A	D	B	B	D	C		D	B	
d_A, Approach Delay [s/veh]	13.02			18.49			34.44			32.91		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.82											
Intersection LOS	C											
Intersection V/C	0.636											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.563

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	311	666	199	94	376	423	268	549	140	205	660	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.55	0.55	0.55	0.55	0.55	0.55	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	749	0	19	850	28	52	0	0	0	0	35
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	1115	109	71	1057	261	320	549	140	205	660	131
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	293	29	19	278	69	84	144	37	54	174	34
Total Analysis Volume [veh/h]	180	1174	115	75	1113	275	337	578	147	216	695	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	3.6	3.6	5.2	3.6	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	25	11	10	22	13	13	24	0	11	22	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	28	39	6	27	40	11	19	19	8	16	16
g / C, Green / Cycle	0.11	0.40	0.55	0.09	0.39	0.58	0.16	0.27	0.27	0.12	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.26	0.08	0.02	0.24	0.19	0.11	0.13	0.10	0.07	0.15	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	335	1845	731	287	1775	765	487	1239	387	365	1059	331
d1, Uniform Delay [s]	29.56	16.74	9.02	29.53	17.30	9.29	27.90	21.28	20.72	29.28	24.35	22.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.34	1.69	0.46	0.48	1.69	0.28	1.77	0.27	0.62	1.53	0.70	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

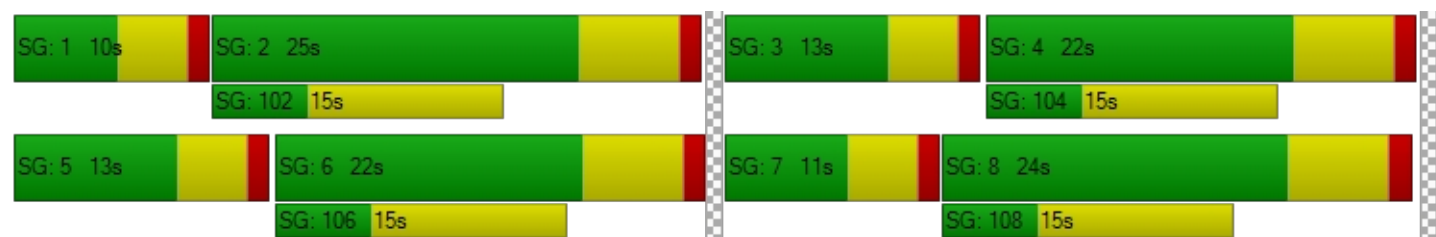
X, volume / capacity	0.54	0.64	0.16	0.26	0.63	0.36	0.69	0.47	0.38	0.59	0.66	0.42
d, Delay for Lane Group [s/veh]	30.91	18.43	9.48	30.01	18.99	9.57	29.66	21.55	21.34	30.81	25.05	23.70
Lane Group LOS	C	B	A	C	B	A	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.40	4.63	0.86	0.57	4.46	1.98	2.59	2.42	1.84	1.68	3.24	1.85
50th-Percentile Queue Length [ft]	35.05	115.69	21.46	14.23	111.51	49.54	64.67	60.54	46.06	42.05	80.99	46.26
95th-Percentile Queue Length [veh]	2.52	8.16	1.54	1.02	7.92	3.57	4.66	4.36	3.32	3.03	5.83	3.33
95th-Percentile Queue Length [ft]	63.10	203.89	38.62	25.61	198.10	89.17	116.41	108.98	82.90	75.68	145.77	83.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.91	18.43	9.48	30.01	18.99	9.57	29.66	21.55	21.34	30.81	25.05	23.70
Movement LOS	C	B	A	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.26			17.78			24.09			26.06		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	21.26											
Intersection LOS	C											
Intersection V/C	0.563											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 46: Hellman Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	1.3
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.265

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐⇐		⇐⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	375	0	0	272
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	375	0	0	272
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	750	0	0	544
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	197	0	0	143
Total Analysis Volume [veh/h]	0	0	789	0	0	573
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.8	0.0	4.8	0.0	0.0	4.8
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	11	0	109	0	0	109
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	9	9	107	107	107	107
g / C, Green / Cycle	0.08	0.08	0.89	0.89	0.89	0.89
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.27	0.27	0.00	0.20
s, saturation flow rate [veh/h]	1416	1264	1487	1487	546	2831
c, Capacity [veh/h]	106	95	1326	1326	521	2524
d1, Uniform Delay [s]	0.00	0.00	0.96	0.96	0.00	0.88
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.57	0.57	0.00	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.00	0.00	0.30	0.30	0.00	0.23
d, Delay for Lane Group [s/veh]	0.00	0.00	1.53	1.53	0.00	1.09
Lane Group LOS	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.00	0.00	0.36	0.36	0.00	0.17
50th-Percentile Queue Length [ft]	0.00	0.00	8.96	8.96	0.00	4.29
95th-Percentile Queue Length [veh]	0.00	0.00	0.64	0.64	0.00	0.31
95th-Percentile Queue Length [ft]	0.00	0.00	16.12	16.12	0.00	7.72

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	1.53	1.53	0.00	1.09
Movement LOS	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00		1.53		1.09	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.35					
Intersection LOS	A					
Intersection V/C	0.265					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 47: Hellman Ave/Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	1.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.401

**Intersection Setup**

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	188	510	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	292	624	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	480	1134	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	126	298	0
Total Analysis Volume [veh/h]	0	0	0	505	1194	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.8	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	11	0	0	109	109	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	1.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	4	112	112	112	112
g / C, Green / Cycle	0.03	0.03	0.93	0.93	0.93	0.93
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.18	0.40	0.40
s, saturation flow rate [veh/h]	1416	1264	373	2831	1487	1487
c, Capacity [veh/h]	47	42	385	2643	1388	1388
d1, Uniform Delay [s]	0.00	0.00	0.00	0.32	0.44	0.44
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.16	0.97	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.00	0.00	0.00	0.19	0.43	0.43
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.48	1.42	1.42
Lane Group LOS	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.06	0.38	0.38
50th-Percentile Queue Length [ft]	0.00	0.00	0.00	1.48	9.40	9.40
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.11	0.68	0.68
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	2.66	16.91	16.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.48	1.42	1.42
Movement LOS	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00		0.48		1.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.14					
Intersection LOS	A					
Intersection V/C	0.401					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 66: Archibald Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	0	1326	27	14	650	0	0	0	0	10	0	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	201	1071	23	88	1569	38	38	54	283	45	33	90
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	201	2105	44	99	2076	38	38	54	283	55	33	140
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	554	12	26	546	10	10	14	74	14	9	37
Total Analysis Volume [veh/h]	212	2216	46	104	2185	40	40	57	298	58	35	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	0	5	0
Maximum Green [s]	5	30	0	30	30	0	30	30	5	0	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	3.6	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	10	30	0	10	30	0	19	40	10	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	Yes	No		No	No		No	No			No	
Maximum Recall	No	No		No	No		No	No			No	
Pedestrian Recall	No	No		No	No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	46	46	7	45	45	5	21	21	14	14	14
g / C, Green / Cycle	0.10	0.57	0.57	0.09	0.56	0.56	0.07	0.27	0.27	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.07	0.47	0.47	0.03	0.46	0.46	0.03	0.03	0.21	0.05	0.02	0.10
s, saturation flow rate [veh/h]	3101	3192	1659	3101	3192	1661	1597	1676	1425	1207	1676	1425
c, Capacity [veh/h]	310	1820	946	276	1785	929	106	445	379	255	292	248
d1, Uniform Delay [s]	34.78	13.82	13.88	34.35	14.33	14.37	35.74	22.33	27.27	31.31	27.87	30.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.66	4.18	7.91	0.85	4.33	8.10	2.19	0.13	3.66	0.45	0.18	2.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

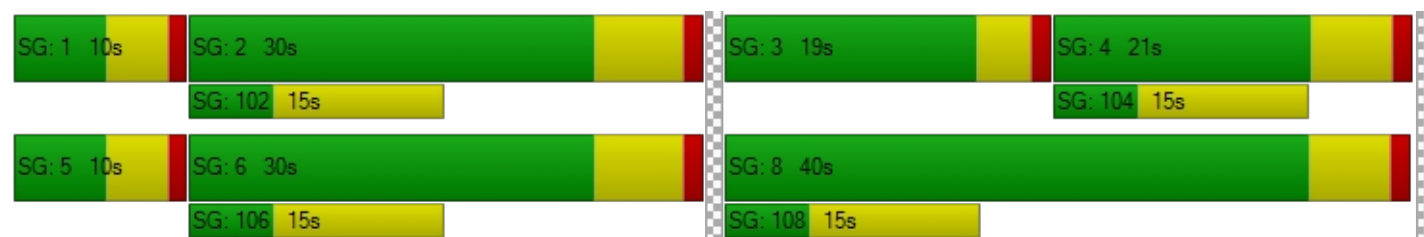
X, volume / capacity	0.68	0.82	0.82	0.38	0.82	0.82	0.38	0.13	0.79	0.23	0.12	0.59
d, Delay for Lane Group [s/veh]	37.44	17.99	21.78	35.20	18.66	22.47	37.93	22.46	30.93	31.75	28.05	32.68
Lane Group LOS	D	B	C	D	B	C	D	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	2.01	9.67	11.12	0.94	9.76	11.19	0.78	0.78	5.28	1.00	0.55	2.61
50th-Percentile Queue Length [ft]	50.26	241.80	277.99	23.56	244.10	279.76	19.49	19.56	131.98	24.90	13.77	65.35
95th-Percentile Queue Length [veh]	3.62	14.77	16.59	1.70	14.89	16.68	1.40	1.41	9.05	1.79	0.99	4.71
95th-Percentile Queue Length [ft]	90.47	369.31	414.70	42.41	372.22	416.91	35.09	35.21	226.19	44.82	24.79	117.63

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.44	19.24	21.78	35.20	19.92	22.47	37.93	22.46	30.93	31.75	28.05	32.68
Movement LOS	D	B	C	D	B	C	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.85			20.65			30.42			31.78		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	21.94											
Intersection LOS	C											
Intersection V/C	0.737											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	223	895	174	95	956	99	125	426	103	157	435	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.20	1.20	1.20	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	61	0	0	34	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	268	1135	209	114	1181	119	125	426	103	157	435	89
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	299	55	30	311	31	33	112	27	41	114	23
Total Analysis Volume [veh/h]	282	1195	220	120	1243	125	132	448	108	165	458	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	32	0	63	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	11	41	41	0	28	28	25	16	16	8	16	16
g / C, Green / Cycle	0.16	0.58	0.58	0.00	0.40	0.40	0.36	0.23	0.23	0.11	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.18	0.30	0.30	1.04	0.28	0.28	0.13	0.17	0.17	0.10	0.16	0.16
s, saturation flow rate [veh/h]	1597	3192	1547	115	3192	1665	1028	1676	1566	1592	1744	1642
c, Capacity [veh/h]	251	1853	898	103	1260	657	384	390	364	307	406	383
d1, Uniform Delay [s]	29.50	8.78	8.79	35.00	17.85	17.85	18.96	24.87	24.90	18.45	24.58	24.60
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	67.41	1.02	2.11	140.43	3.46	6.49	0.53	2.72	2.97	1.46	2.18	2.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

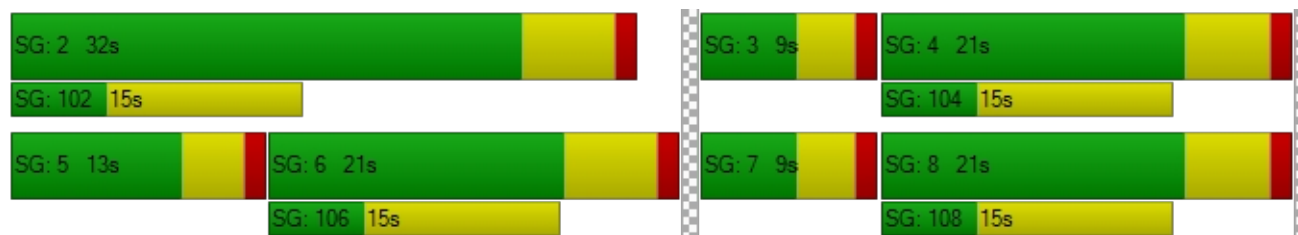
X, volume / capacity	1.12	0.51	0.52	1.17	0.71	0.71	0.34	0.74	0.74	0.54	0.70	0.70
d, Delay for Lane Group [s/veh]	96.91	9.80	10.90	175.43	21.31	24.34	19.49	27.59	27.87	19.91	26.76	26.94
Lane Group LOS	F	A	B	F	C	C	B	C	C	B	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	8.58	3.52	3.70	6.01	5.87	6.68	1.50	4.30	4.07	1.97	4.17	3.96
50th-Percentile Queue Length [ft]	214.58	88.11	92.39	150.30	146.79	166.98	37.51	107.56	101.72	49.27	104.22	99.03
95th-Percentile Queue Length [veh]	14.08	6.34	6.65	10.03	9.85	10.92	2.70	7.70	7.32	3.55	7.50	7.13
95th-Percentile Queue Length [ft]	351.98	158.59	166.30	250.84	246.14	272.94	67.52	192.60	183.10	88.69	187.60	178.26

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	96.91	10.02	10.90	175.43	22.15	24.34	19.49	27.69	27.87	19.91	26.83	26.94
Movement LOS	F	B	B	F	C	C	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	24.57			34.69			26.15			25.25		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.20											
Intersection LOS	C											
Intersection V/C	0.713											

**Sequence**

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	181	681	76	104	1078	112	117	245	268	242	338	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.28	1.28	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	49	0	0	44	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	921	97	133	1424	143	117	245	268	242	338	86
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	242	26	35	375	38	31	64	71	64	89	23
Total Analysis Volume [veh/h]	244	969	102	140	1499	151	123	258	282	255	356	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	27	0	12	29	0	9	21	0	10	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	8	30	30	7	29	29	27	17	17	27	19	19
g / C, Green / Cycle	0.11	0.43	0.43	0.10	0.41	0.41	0.39	0.25	0.25	0.39	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.08	0.22	0.22	0.05	0.34	0.34	0.12	0.15	0.19	0.24	0.14	0.14
s, saturation flow rate [veh/h]	3101	3192	1596	3101	3192	1599	1053	1676	1482	1046	1676	1625
c, Capacity [veh/h]	354	1356	678	309	1309	656	440	414	366	399	449	435
d1, Uniform Delay [s]	29.80	14.92	14.92	29.72	18.57	18.60	16.98	23.45	24.50	19.65	21.70	21.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.13	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.39	1.47	2.92	1.04	6.58	12.39	0.34	1.54	3.44	2.12	0.88	0.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.69	0.53	0.53	0.45	0.84	0.84	0.28	0.62	0.77	0.64	0.50	0.51
d, Delay for Lane Group [s/veh]	32.19	16.38	17.84	30.76	25.15	30.99	17.32	24.98	27.94	21.77	22.58	22.63
Lane Group LOS	C	B	B	C	C	C	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.93	3.77	4.05	1.07	7.81	8.91	1.30	3.62	4.29	3.11	2.96	2.89
50th-Percentile Queue Length [ft]	48.15	94.30	101.18	26.70	195.35	222.81	32.60	90.60	107.18	77.73	74.07	72.34
95th-Percentile Queue Length [veh]	3.47	6.79	7.28	1.92	12.40	13.81	2.35	6.52	7.68	5.60	5.33	5.21
95th-Percentile Queue Length [ft]	86.67	169.74	182.12	48.05	309.96	345.21	58.68	163.08	192.07	139.91	133.32	130.21

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.19	16.77	17.84	30.76	26.71	30.99	17.32	24.98	27.94	21.77	22.60	22.63
Movement LOS	C	B	B	C	C	C	B	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.71			27.39			24.82			22.30		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	23.95											
Intersection LOS	C											
Intersection V/C	0.740											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.401

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	142	342	62	38	650	35	48	316	340	259	170	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	319	0	0	498	0	0	0	11	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	644	59	36	1116	33	48	316	351	259	170	18
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	169	16	9	294	9	13	83	92	68	45	5
Total Analysis Volume [veh/h]	154	678	62	38	1175	35	51	333	369	273	179	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	11	21	12	16	26	10	10	21	11	12	23	16
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	9	35	46	5	31	38	5	13	24	9	17	23
g / C, Green / Cycle	0.13	0.50	0.66	0.07	0.44	0.55	0.08	0.18	0.34	0.13	0.24	0.33
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.04	0.01	0.26	0.02	0.02	0.10	0.26	0.09	0.06	0.01
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	399	2293	898	216	2025	737	238	584	440	405	757	433
d1, Uniform Delay [s]	27.97	10.19	5.01	30.66	14.60	8.36	30.34	26.08	22.57	29.00	21.58	17.18
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.16	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.61	0.33	0.15	0.38	1.22	0.03	0.45	0.88	6.27	1.96	0.16	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.39	0.30	0.07	0.18	0.58	0.05	0.21	0.57	0.84	0.67	0.24	0.04
d, Delay for Lane Group [s/veh]	28.58	10.51	5.16	31.05	15.82	8.39	30.79	26.96	28.83	30.96	21.74	17.22
Lane Group LOS	C	B	A	C	B	A	C	C	C	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.14	1.75	0.29	0.30	4.17	0.22	0.39	2.41	5.80	2.14	1.11	0.20
50th-Percentile Queue Length [ft]	28.41	43.71	7.15	7.39	104.31	5.56	9.84	60.13	145.00	53.51	27.68	5.04
95th-Percentile Queue Length [veh]	2.05	3.15	0.51	0.53	7.51	0.40	0.71	4.33	9.75	3.85	1.99	0.36
95th-Percentile Queue Length [ft]	51.14	78.68	12.87	13.29	187.76	10.00	17.72	108.23	243.75	96.33	49.83	9.07

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.58	10.51	5.16	31.05	15.82	8.39	30.79	26.96	28.83	30.96	21.74	17.22
Movement LOS	C	B	A	C	B	A	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	13.26			16.08			28.14			26.90		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.54											
Intersection LOS	B											
Intersection V/C	0.401											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐						⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	212	982	0	0	856	491	0	0	0	432	0	334
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.20	1.20	1.00	1.00	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	356	72	0	0	37	0	0	0	0	56	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	610	1250	0	0	1064	589	0	0	0	488	0	334
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	161	329	0	0	280	155	0	0	0	128	0	88
Total Analysis Volume [veh/h]	642	1316	0	0	1120	620	0	0	0	514	0	352
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	0	4	0
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	15	45	0	0	30	0	0	0	0	0	0	15	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	0	10	0
Rest In Walk		No			No							No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	No			No							No	
Pedestrian Recall	No	No			No							No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	13	43	28	28		13	13	13
g / C, Green / Cycle	0.22	0.72	0.47	0.47		0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.21	0.29	0.35	0.44		0.18	0.19	0.20
s, saturation flow rate [veh/h]	3101	4567	3192	1425		1597	1551	1425
c, Capacity [veh/h]	672	3273	1490	665		346	336	309
d1, Uniform Delay [s]	23.22	3.38	13.15	15.11		22.57	22.66	22.92
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	8.69	0.37	3.55	21.75		5.90	6.72	10.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

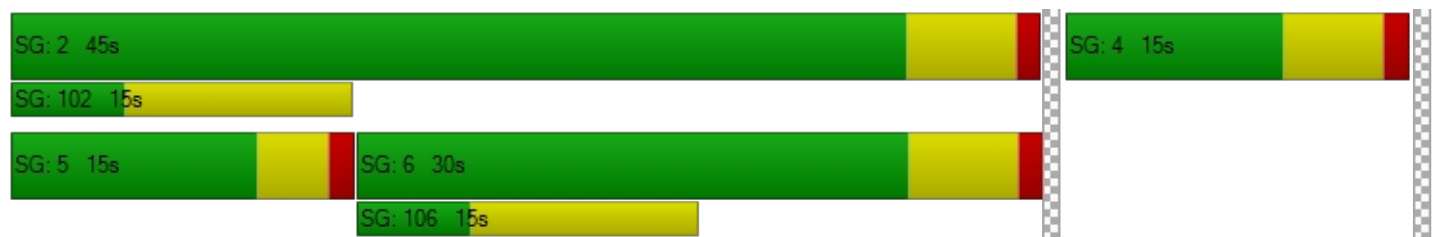
X, volume / capacity	0.96	0.40	0.75	0.93		0.85	0.87	0.91
d, Delay for Lane Group [s/veh]	31.90	3.75	16.69	36.86		28.47	29.37	33.04
Lane Group LOS	C	A	B	D		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	4.74	0.97	5.52	10.11		4.07	4.11	4.26
50th-Percentile Queue Length [ft]	118.61	24.13	138.08	252.77		101.85	102.66	106.62
95th-Percentile Queue Length [veh]	8.32	1.74	9.38	15.33		7.33	7.39	7.65
95th-Percentile Queue Length [ft]	207.92	43.43	234.44	383.14		183.33	184.79	191.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.90	3.75	0.00	0.00	16.69	36.86	0.00	0.00	0.00	28.86	29.37	32.36
Movement LOS	C	A			B	D				C	C	C
d_A, Approach Delay [s/veh]	12.98			23.88			0.00			30.25		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	20.41											
Intersection LOS	C											
Intersection V/C	0.839											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	28.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.938

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T			TT			T+					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	843	439	286	1007	0	347	2	234	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.20	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	428	277	0	93	0	0	0	104	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1440	804	343	1301	0	347	2	338	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	379	212	90	342	0	91	1	89	0	0	0
Total Analysis Volume [veh/h]	0	1516	846	361	1369	0	365	2	356	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	41	0	10	51	0	0	19	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	39	39	8	49	17	17	
g / C, Green / Cycle	0.56	0.56	0.11	0.70	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.47	0.57	0.12	0.30	0.23	0.25	
s, saturation flow rate [veh/h]	3192	1482	3101	4567	1597	1426	
c, Capacity [veh/h]	1778	826	354	3197	388	346	
d1, Uniform Delay [s]	13.07	15.50	31.00	4.50	26.01	26.50	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.15	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.41	37.72	27.04	0.42	11.28	35.23	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.85	1.02	1.02	0.43	0.94	1.03	
d, Delay for Lane Group [s/veh]	18.48	53.22	58.04	4.92	37.29	61.73	
Lane Group LOS	B	F	F	A	D	F	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	8.95	18.48	4.11	1.75	6.60	8.60	
50th-Percentile Queue Length [ft]	223.71	462.08	102.70	43.78	165.04	214.93	
95th-Percentile Queue Length [veh]	13.85	26.03	7.39	3.15	10.82	13.64	
95th-Percentile Queue Length [ft]	346.36	650.71	184.87	78.80	270.39	341.07	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	18.48	53.22	58.04	4.92	0.00	37.52	61.73	61.73	0.00	0.00	0.00
Movement LOS		B	F	F	A		D	E	F			
d_A, Approach Delay [s/veh]	30.92			16.00			49.39			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	28.34											
Intersection LOS	C											
Intersection V/C	0.938											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	36.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.012

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	160	807	0	0	922	680	0	0	0	205	2	306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.00	1.00	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	12	49	0	0	44	0	0	0	0	3	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	217	1082	0	0	1224	870	0	0	0	208	2	306
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	285	0	0	322	229	0	0	0	55	1	81
Total Analysis Volume [veh/h]	228	1139	0	0	1288	916	0	0	0	219	2	322
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	11	53	0	0	42	0	0	0	0	0	17	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	70	70	70	70		70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	9	51	40	40		15	15
g / C, Green / Cycle	0.13	0.73	0.57	0.57		0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.14	0.36	0.40	0.64		0.14	0.23
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	205	2326	1824	814		342	305
d1, Uniform Delay [s]	30.50	4.01	10.78	15.00		25.08	27.50
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	64.48	0.74	2.33	71.80		2.04	39.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	1.11	0.49	0.71	1.12		0.65	1.05
d, Delay for Lane Group [s/veh]	94.98	4.75	13.11	86.80		27.12	67.24
Lane Group LOS	F	A	B	F		C	F
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	6.83	1.76	5.74	25.30		3.26	8.01
50th-Percentile Queue Length [ft]	170.72	43.89	143.46	632.48		81.42	200.27
95th-Percentile Queue Length [veh]	11.58	3.16	9.67	36.69		5.86	12.99
95th-Percentile Queue Length [ft]	289.50	79.01	241.67	917.24		146.56	324.72

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	94.98	4.75	0.00	0.00	13.11	86.80	0.00	0.00	0.00	27.12	27.12	67.24
Movement LOS	F	A			B	F				C	C	F
d_A, Approach Delay [s/veh]	19.80		43.73		0.00		50.91					
Approach LOS	B		D		A		D					
d_I, Intersection Delay [s/veh]	36.73											
Intersection LOS	D											
Intersection V/C	1.012											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	51.2
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.977

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	581	251	416	709	0	380	1	226	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.28	1.28	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	61	3	0	47	0	0	0	16	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	805	324	532	955	0	380	1	242	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	212	85	140	251	0	100	0	64	0	0	0
Total Analysis Volume [veh/h]	0	847	341	560	1005	0	400	1	255	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	30	0	29	59	0	0	21	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	80	80	80	80	80	80	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	28	28	27	57	19	19	
g / C, Green / Cycle	0.35	0.35	0.34	0.71	0.24	0.24	
(v / s)_j Volume / Saturation Flow Rate	0.35	0.38	0.35	0.31	0.25	0.18	
s, saturation flow rate [veh/h]	1676	1583	1597	3192	1597	1425	
c, Capacity [veh/h]	587	554	539	2274	379	338	
d1, Uniform Delay [s]	26.00	26.00	26.50	4.83	30.50	28.32	
k, delay calibration	0.50	0.50	0.40	0.50	0.21	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	40.26	58.98	45.41	0.63	46.18	3.41	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	1.01	1.07	1.04	0.44	1.06	0.75	
d, Delay for Lane Group [s/veh]	66.26	84.98	71.91	5.45	76.68	31.73	
Lane Group LOS	F	F	F	A	F	C	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	16.59	18.55	15.87	2.27	11.63	4.55	
50th-Percentile Queue Length [ft]	414.71	463.63	396.80	56.71	290.81	113.66	
95th-Percentile Queue Length [veh]	23.46	26.80	22.97	4.08	17.76	8.04	
95th-Percentile Queue Length [ft]	586.52	669.91	574.27	102.08	443.89	201.08	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	71.85	84.98	71.91	5.45	0.00	76.68	76.68	31.73	0.00	0.00	0.00
Movement LOS		E	F	F	A		F	E	C			
d_A, Approach Delay [s/veh]	75.62			29.23			59.21			0.00		
Approach LOS	E			C			E			A		
d_I, Intersection Delay [s/veh]	51.16											
Intersection LOS	D											
Intersection V/C	0.977											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	52.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.984

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	1	0	0	0	0	0	0	0	1
Pocket Length [ft]	530.00	100.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	322	456	0	0	993	339	0	0	0	304	5	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	359	330	0	0	509	0	0	0	0	224	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	665	763	0	0	1452	322	0	0	0	528	5	150
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	175	201	0	0	382	85	0	0	0	139	1	39
Total Analysis Volume [veh/h]	700	803	0	0	1528	339	0	0	0	556	5	158
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	52	0	0	33	0	0	0	0	0	28	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	80	80	80	80		80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	17	50	31	31		26	26
g / C, Green / Cycle	0.21	0.63	0.39	0.39		0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.23	0.18	0.39	0.41		0.35	0.11
s, saturation flow rate [veh/h]	3101	4567	3192	1529		1597	1425
c, Capacity [veh/h]	659	2854	1237	593		519	463
d1, Uniform Delay [s]	31.50	6.83	24.50	24.50		27.00	20.50
k, delay calibration	0.11	0.50	0.50	0.50		0.40	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	35.93	0.25	27.12	50.79		59.30	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	1.06	0.28	1.01	1.05		1.08	0.34
d, Delay for Lane Group [s/veh]	67.43	7.07	51.62	75.29		86.30	20.93
Lane Group LOS	F	A	F	F		F	C
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh]	9.21	1.69	15.03	18.30		17.52	2.13
50th-Percentile Queue Length [ft]	230.32	42.19	375.81	457.54		437.99	53.21
95th-Percentile Queue Length [veh]	14.63	3.04	21.48	26.18		25.60	3.83
95th-Percentile Queue Length [ft]	365.71	75.94	537.10	654.48		640.03	95.77

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	67.43	7.07	0.00	0.00	56.01	75.29	0.00	0.00	0.00	86.30	86.30	20.93
Movement LOS	F	A			E	E				F	F	C
d_A, Approach Delay [s/veh]	35.18			59.51			0.00			71.93		
Approach LOS	D			E			A			E		
d_I, Intersection Delay [s/veh]	52.75											
Intersection LOS	D											
Intersection V/C	0.984											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.658

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	712	396	306	985	0	79	1	450	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	614	271	0	735	0	0	0	259	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1290	647	291	1671	0	79	1	709	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	339	170	77	440	0	21	0	187	0	0	0
Total Analysis Volume [veh/h]	0	1358	681	306	1759	0	83	1	746	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	18	39	0	0	21	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	L	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	26	9	37	19	19	19	
g / C, Green / Cycle	0.43	0.15	0.62	0.32	0.32	0.32	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.10	0.39	0.05	0.26	0.26	
s, saturation flow rate [veh/h]	4567	3101	4567	1597	1426	1425	
c, Capacity [veh/h]	1954	483	2818	505	451	451	
d1, Uniform Delay [s]	13.98	23.72	7.16	14.79	19.00	19.00	
k, delay calibration	0.50	0.11	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.07	1.38	1.05	0.15	3.96	3.96	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.70	0.63	0.62	0.16	0.83	0.83	
d, Delay for Lane Group [s/veh]	16.05	25.09	8.21	14.94	22.96	22.97	
Lane Group LOS	B	C	A	B	C	C	
Critical Lane Group	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh]	4.36	1.92	3.18	0.73	4.57	4.57	
50th-Percentile Queue Length [ft]	108.90	47.93	79.49	18.17	114.35	114.34	
95th-Percentile Queue Length [veh]	7.78	3.45	5.72	1.31	8.08	8.08	
95th-Percentile Queue Length [ft]	194.48	86.27	143.09	32.70	202.03	202.03	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	16.05	0.00	25.09	8.21	0.00	14.94	22.96	22.96	0.00	0.00	0.00
Movement LOS		B		C	A		B	C	C			
d_A, Approach Delay [s/veh]	16.05			10.71			22.16			0.00		
Approach LOS	B			B			C			A		
d_I, Intersection Delay [s/veh]	14.65											
Intersection LOS	B											
Intersection V/C	0.658											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	118	995	63	276	805	145	115	335	132	87	262	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.20	1.20	1.20	1.20	1.20	1.20	1.19	1.19	1.19	1.19	1.19	1.19
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	796	0	0	197	0	0	0	12	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	1990	76	331	1163	174	137	399	169	104	312	171
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	524	20	87	306	46	36	105	44	27	82	45
Total Analysis Volume [veh/h]	149	2095	80	348	1224	183	144	420	178	109	328	180
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	43	0	13	46	0	0	24	0	0	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	41	41	11	45	45	22	22	22	22	22	22
g / C, Green / Cycle	0.09	0.51	0.51	0.14	0.56	0.56	0.28	0.28	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.05	0.52	0.06	0.13	0.30	0.14	0.20	0.21	0.21	0.17	0.18	0.18
s, saturation flow rate [veh/h]	2750	4050	1264	2750	4050	1264	709	1487	1339	652	1487	1313
c, Capacity [veh/h]	254	2076	648	378	2259	705	167	409	368	139	409	361
d1, Uniform Delay [s]	34.85	19.50	10.15	34.07	11.21	9.15	37.71	26.65	26.69	38.65	25.64	25.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.13	0.13	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.15	22.03	0.39	9.41	0.94	0.89	13.01	3.64	4.19	9.26	1.78	2.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.59	1.01	0.12	0.92	0.54	0.26	0.86	0.77	0.77	0.78	0.65	0.67
d, Delay for Lane Group [s/veh]	37.00	41.53	10.54	43.47	12.15	10.04	50.72	30.29	30.88	47.91	27.43	27.84
Lane Group LOS	D	F	B	D	B	B	D	C	C	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.40	14.87	0.71	3.65	3.98	1.56	3.32	5.49	5.04	2.42	4.37	3.97
50th-Percentile Queue Length [ft]	35.10	371.82	17.76	91.18	99.40	38.95	83.03	137.36	125.92	60.41	109.35	99.19
95th-Percentile Queue Length [veh]	2.53	21.34	1.28	6.57	7.16	2.80	5.98	9.34	8.72	4.35	7.80	7.14
95th-Percentile Queue Length [ft]	63.18	533.62	31.97	164.13	178.91	70.12	149.46	233.47	217.94	108.73	195.09	178.53

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.00	41.53	10.54	43.47	12.15	10.04	50.72	30.44	30.88	47.91	27.50	27.84
Movement LOS	D	F	B	D	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	40.17			18.14			34.48			31.21		
Approach LOS	D			B			C			C		
d_I, Intersection Delay [s/veh]	31.27											
Intersection LOS	C											
Intersection V/C	0.856											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↻↵			↵↻↵			↵↻↵			↵↻↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	63	506	34	179	495	141	128	257	52	19	153	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.28	1.28	1.28	1.28	1.19	1.19	1.19	1.19	1.19	1.19
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	65	0	0	60	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	713	44	229	694	180	152	306	62	23	182	133
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	188	12	60	183	47	40	81	16	6	48	35
Total Analysis Volume [veh/h]	85	751	46	241	731	189	160	322	65	24	192	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	22	0	15	21	0	12	23	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	6	27	27	13	34	34	10	18	18	24	12	12
g / C, Green / Cycle	0.09	0.39	0.39	0.19	0.48	0.48	0.14	0.26	0.26	0.34	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.24	0.15	0.28	0.28	0.10	0.12	0.12	0.02	0.10	0.11
s, saturation flow rate [veh/h]	1597	1676	1709	1597	1676	1624	1597	1676	1580	1043	1676	1451
c, Capacity [veh/h]	145	646	658	297	805	780	219	429	404	395	298	258
d1, Uniform Delay [s]	30.55	17.30	17.30	27.33	13.11	13.13	28.97	21.98	22.01	18.32	26.39	26.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.71	4.27	4.20	5.35	3.04	3.15	4.66	0.78	0.84	0.06	1.80	2.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

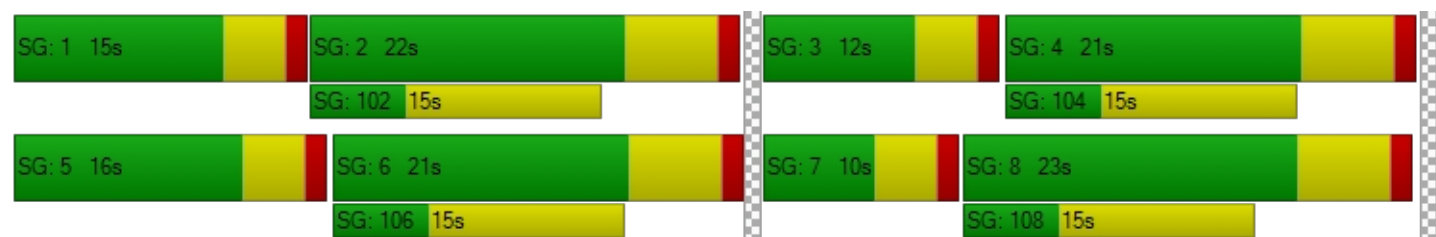
X, volume / capacity	0.59	0.61	0.61	0.81	0.58	0.58	0.73	0.46	0.47	0.06	0.58	0.62
d, Delay for Lane Group [s/veh]	34.26	21.57	21.50	32.69	16.15	16.28	33.63	22.76	22.85	18.38	28.19	28.94
Lane Group LOS	C	C	C	C	B	B	C	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.42	5.09	5.18	3.92	4.90	4.78	2.67	2.59	2.48	0.26	2.60	2.42
50th-Percentile Queue Length [ft]	35.45	127.31	129.45	98.08	122.42	119.58	66.85	64.84	62.05	6.57	64.92	60.61
95th-Percentile Queue Length [veh]	2.55	8.79	8.91	7.06	8.53	8.37	4.81	4.67	4.47	0.47	4.67	4.36
95th-Percentile Queue Length [ft]	63.82	219.83	222.75	176.54	213.15	209.25	120.32	116.71	111.69	11.82	116.85	109.10

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.26	21.54	21.50	32.69	16.20	16.28	33.63	22.79	22.85	18.38	28.26	28.94
Movement LOS	C	C	C	C	B	B	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	22.76			19.63			25.97			27.86		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	22.74											
Intersection LOS	C											
Intersection V/C	0.596											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	8.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐   ⇐			⇐   ⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	65	736	43	138	1073	14	18	7	32	23	12	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	926	0	0	949	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	1625	41	131	1968	13	18	7	32	23	12	74
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	428	11	34	518	3	5	2	8	6	3	19
Total Analysis Volume [veh/h]	65	1711	43	138	2072	14	19	7	34	24	13	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	19	30	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	40	40	8	42	42	7	7	7	7
g / C, Green / Cycle	0.09	0.66	0.66	0.13	0.70	0.70	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.04	0.36	0.36	0.09	0.43	0.43	0.02	0.03	0.02	0.06
s, saturation flow rate [veh/h]	1597	3192	1656	1597	3192	1671	1170	1521	1224	1456
c, Capacity [veh/h]	147	2112	1096	206	2230	1167	166	166	210	159
d1, Uniform Delay [s]	25.78	5.38	5.38	24.91	4.77	4.77	28.15	24.46	26.29	25.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.08	1.02	1.97	3.74	1.27	2.42	0.30	0.77	0.24	3.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

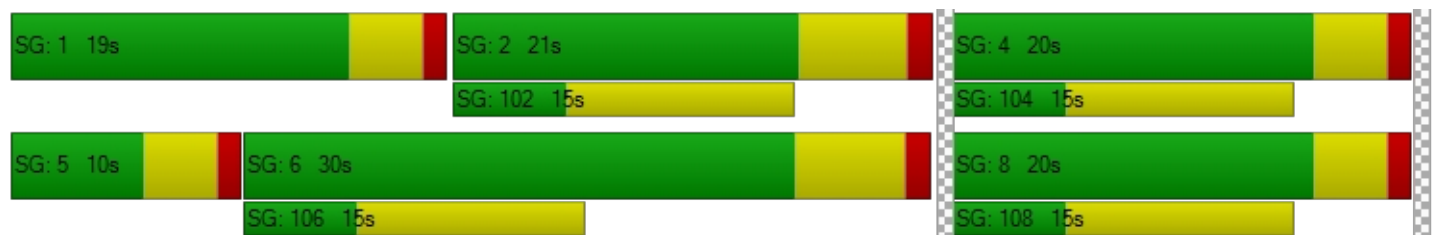
X, volume / capacity	0.44	0.55	0.55	0.67	0.61	0.61	0.11	0.25	0.11	0.57
d, Delay for Lane Group [s/veh]	27.85	6.40	7.35	28.65	6.04	7.20	28.45	25.23	26.53	28.60
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.88	2.36	2.74	1.90	2.40	2.88	0.26	0.52	0.31	1.26
50th-Percentile Queue Length [ft]	22.10	59.09	68.53	47.59	59.88	72.09	6.48	13.02	7.77	31.51
95th-Percentile Queue Length [veh]	1.59	4.25	4.93	3.43	4.31	5.19	0.47	0.94	0.56	2.27
95th-Percentile Queue Length [ft]	39.79	106.36	123.36	85.66	107.79	129.77	11.66	23.43	13.98	56.71

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.85	6.71	7.35	28.65	6.44	7.20	28.45	25.23	25.23	26.53	28.60	28.60
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	7.48			7.82			26.25			28.17		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.49											
Intersection LOS	A											
Intersection V/C	0.532											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	67	832	259	118	717	133	118	395	45	200	459	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	0.86	0.86	0.86	0.86	0.86	0.86
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	46	706	0	0	195	2	0	284	13	0	248	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	1821	347	158	1156	180	101	624	52	172	643	70
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	479	91	42	304	47	27	164	14	45	169	18
Total Analysis Volume [veh/h]	143	1917	365	166	1217	189	106	657	55	181	677	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	38	0	10	38	11	11	21	0	11	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	36	36	8	36	46	8	19	19	9	20	20
g / C, Green / Cycle	0.10	0.45	0.45	0.10	0.45	0.57	0.10	0.24	0.24	0.11	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.43	0.44	0.09	0.24	0.12	0.06	0.19	0.19	0.10	0.20	0.20
s, saturation flow rate [veh/h]	1774	3547	1718	1774	5074	1583	1774	1937	1885	1774	1863	1872
c, Capacity [veh/h]	177	1602	776	177	2292	864	172	457	445	200	469	471
d1, Uniform Delay [s]	35.24	21.05	21.62	35.74	15.82	9.36	34.70	28.70	28.71	35.09	28.05	28.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.32	13.23	28.29	19.19	0.89	0.13	3.58	3.09	3.19	14.18	3.25	3.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.95	0.98	0.94	0.53	0.22	0.62	0.79	0.79	0.91	0.80	0.80
d, Delay for Lane Group [s/veh]	43.56	34.28	49.91	54.93	16.71	9.49	38.28	31.80	31.89	49.27	31.30	31.29
Lane Group LOS	D	C	D	D	B	A	D	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	3.00	14.71	18.21	4.00	4.91	1.48	2.06	6.44	6.28	4.09	6.65	6.68
50th-Percentile Queue Length [ft]	75.04	367.69	455.36	99.92	122.71	37.06	51.47	161.03	157.11	102.22	166.23	167.05
95th-Percentile Queue Length [veh]	5.40	21.00	25.21	7.19	8.54	2.67	3.71	10.60	10.40	7.36	10.88	10.92
95th-Percentile Queue Length [ft]	135.07	524.92	630.35	179.86	213.55	66.70	92.65	265.09	259.89	184.00	271.96	273.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.56	37.51	49.91	54.93	16.71	9.49	38.28	31.84	31.89	49.27	31.29	31.29
Movement LOS	D	D	D	D	B	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	39.74			19.88			32.68			34.78		
Approach LOS	D			B			C			C		
d_I, Intersection Delay [s/veh]	32.50											
Intersection LOS	C											
Intersection V/C	0.826											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.369

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↵			↵ ↑ ↵			↵ ↑ ↵			↵ ↑ ↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	14	287	0	0	212	156	146	0	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	0.86	0.86	0.86	0.86	0.86	0.86
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	29	0	47	13	0	0	285	0	0	250	36
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	462	0	47	333	236	126	285	15	0	250	36
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	122	0	12	88	62	33	75	4	0	66	9
Total Analysis Volume [veh/h]	22	486	0	49	351	248	133	300	16	0	263	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	21	0	18	29	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	18	18	18	18	18	18	8	34	34	2	29	29
g / C, Green / Cycle	0.30	0.30	0.30	0.30	0.30	0.30	0.13	0.56	0.56	0.04	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.03	0.14	0.14	0.06	0.19	0.19	0.08	0.09	0.10	0.00	0.09	0.09
s, saturation flow rate [veh/h]	735	1676	1676	815	1676	1450	1597	1676	1647	1597	1676	1604
c, Capacity [veh/h]	200	499	499	249	499	432	200	947	930	60	799	765
d1, Uniform Delay [s]	24.57	17.30	17.30	22.63	18.27	18.34	25.03	6.28	6.28	0.00	9.03	9.05
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	0.74	0.74	0.38	1.37	1.65	3.74	0.38	0.39	0.00	0.53	0.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.11	0.49	0.49	0.20	0.64	0.65	0.66	0.17	0.17	0.00	0.19	0.19
d, Delay for Lane Group [s/veh]	24.81	18.04	18.04	23.01	19.64	19.98	28.77	6.66	6.67	0.00	9.56	9.62
Lane Group LOS	C	B	B	C	B	B	C	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.27	2.47	2.47	0.58	3.48	3.10	1.84	0.79	0.78	0.00	1.02	1.00
50th-Percentile Queue Length [ft]	6.85	61.87	61.87	14.58	86.94	77.38	45.99	19.77	19.57	0.00	25.52	25.12
95th-Percentile Queue Length [veh]	0.49	4.45	4.45	1.05	6.26	5.57	3.31	1.42	1.41	0.00	1.84	1.81
95th-Percentile Queue Length [ft]	12.34	111.36	111.36	26.24	156.50	139.28	82.79	35.58	35.23	0.00	45.94	45.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.81	18.04	18.04	23.01	19.67	19.98	28.77	6.67	6.67	0.00	9.59	9.62
Movement LOS	C	B	B	C	B	B	C	A	A	A	A	A
d_A, Approach Delay [s/veh]	18.33			20.04			13.22			9.59		
Approach LOS	B			C			B			A		
d_I, Intersection Delay [s/veh]	16.33											
Intersection LOS	B											
Intersection V/C	0.369											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.665

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	460	78	254	632	0	0	0	0	146	0	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.86	0.86	0.86	0.86	0.86	0.86	0.96	0.96	0.96	0.96	0.96	0.96
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	93	862	89	119	749	140	85	245	86	99	328	82
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	1258	156	337	1293	140	85	245	86	239	328	180
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	331	41	89	340	37	22	64	23	63	86	47
Total Analysis Volume [veh/h]	98	1324	164	355	1361	147	89	258	91	252	345	189
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.2	5.2	0.0	3.2	5.2	0.0	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	22	0	12	24	0	15	21	0	15	21	12
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	28	28	10	32	32	6	11	11	13	17	29
g / C, Green / Cycle	0.09	0.41	0.41	0.14	0.46	0.46	0.09	0.15	0.15	0.19	0.25	0.42
(v / s)_i Volume / Saturation Flow Rate	0.03	0.31	0.31	0.11	0.31	0.32	0.06	0.08	0.06	0.16	0.11	0.13
s, saturation flow rate [veh/h]	3101	3192	1584	3101	3192	1594	1597	3192	1482	1597	3192	1425
c, Capacity [veh/h]	287	1294	642	443	1454	726	146	485	225	297	785	550
d1, Uniform Delay [s]	29.76	17.98	17.99	29.04	15.14	15.16	30.58	27.39	26.82	27.56	22.32	15.22
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.70	4.44	8.62	3.41	2.71	5.39	4.03	0.91	1.17	6.75	0.39	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

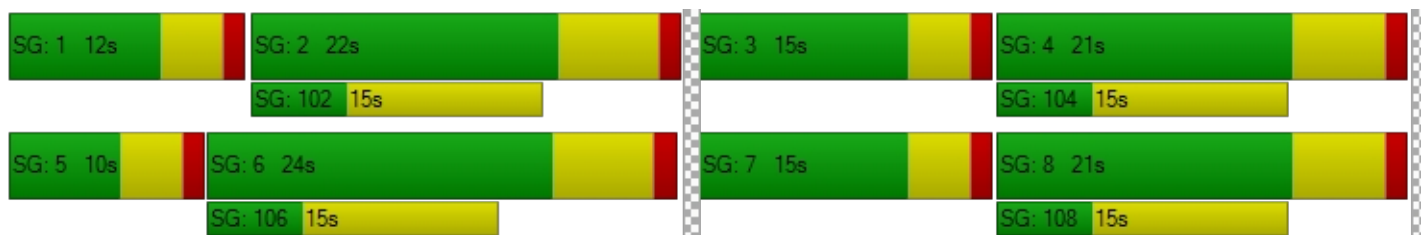
X, volume / capacity	0.34	0.77	0.77	0.80	0.69	0.69	0.61	0.53	0.40	0.85	0.44	0.34
d, Delay for Lane Group [s/veh]	30.46	22.42	26.61	32.45	17.85	20.56	34.61	28.30	27.99	34.31	22.70	15.59
Lane Group LOS	C	C	C	C	B	C	C	C	C	C	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.75	6.73	7.43	2.88	5.85	6.41	1.52	1.91	1.35	4.29	2.23	1.93
50th-Percentile Queue Length [ft]	18.80	168.25	185.69	72.04	146.22	160.31	37.88	47.72	33.74	107.37	55.80	48.26
95th-Percentile Queue Length [veh]	1.35	10.98	11.90	5.19	9.81	10.57	2.73	3.44	2.43	7.69	4.02	3.47
95th-Percentile Queue Length [ft]	33.84	274.61	297.43	129.68	245.37	264.14	68.18	85.90	60.72	192.34	100.45	86.87

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.46	23.46	26.61	32.45	18.56	20.56	34.61	28.30	27.99	34.31	22.70	15.59
Movement LOS	C	C	C	C	B	C	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	24.22			21.36			29.52			24.71		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.66											
Intersection LOS	C											
Intersection V/C	0.665											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↵			↵ ↑ ↵			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	45	1118	172	18	817	63	59	204	46	71	82	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	1.31	1.31	1.31	1.31	1.31	1.31
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	25	751	0	0	208	0	0	240	20	0	280	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	85	2249	230	24	1303	84	77	507	80	93	387	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	592	61	6	343	22	20	133	21	24	102	3
Total Analysis Volume [veh/h]	89	2367	242	25	1372	88	81	534	84	98	407	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	64	41	0	21	41	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	0	39	39	0	39	39	17	17	17	17	17	17
g / C, Green / Cycle	0.00	0.65	0.65	0.00	0.65	0.65	0.28	0.28	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.76	0.54	0.56	0.68	0.30	0.30	0.09	0.19	0.19	0.14	0.13	0.13
s, saturation flow rate [veh/h]	118	3192	1600	37	3192	1625	866	1676	1598	722	1676	1657
c, Capacity [veh/h]	120	2075	1040	120	2075	1056	262	475	453	194	475	469
d1, Uniform Delay [s]	30.00	7.96	8.29	30.00	5.27	5.27	23.16	18.98	19.00	27.66	17.63	17.64
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.44	3.98	9.06	3.90	0.76	1.48	0.67	1.61	1.70	2.02	0.66	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

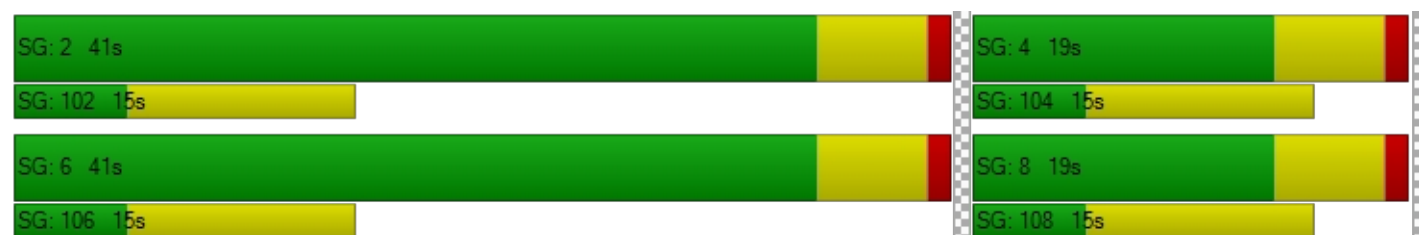
X, volume / capacity	0.74	0.83	0.86	0.21	0.47	0.47	0.31	0.66	0.67	0.50	0.45	0.45
d, Delay for Lane Group [s/veh]	63.44	11.94	17.35	33.90	6.03	6.75	23.83	20.59	20.71	29.68	18.29	18.30
Lane Group LOS	E	B	B	C	A	A	C	C	C	C	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	2.60	5.79	7.63	0.55	1.95	2.20	1.00	3.56	3.42	1.42	2.17	2.15
50th-Percentile Queue Length [ft]	64.95	144.78	190.75	13.67	48.75	54.95	24.90	89.03	85.54	35.38	54.23	53.78
95th-Percentile Queue Length [veh]	4.68	9.74	12.16	0.98	3.51	3.96	1.79	6.41	6.16	2.55	3.90	3.87
95th-Percentile Queue Length [ft]	116.92	243.45	304.00	24.61	87.74	98.91	44.82	160.26	153.97	63.68	97.61	96.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	63.44	13.42	17.35	33.90	6.24	6.75	23.83	20.64	20.71	29.68	18.30	18.30
Movement LOS	E	B	B	C	A	A	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	15.42			6.74			21.02			20.45		
Approach LOS	B			A			C			C		
d_I, Intersection Delay [s/veh]	14.24											
Intersection LOS	B											
Intersection V/C	0.746											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type: Signalized  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 11.7  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.342

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	23	343	25	17	228	15	81	136	26	9	25	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.31	1.31	1.31	1.31	1.31	1.31
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	29	13	0	13	0	0	261	1	9	286	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	547	51	26	357	23	106	439	35	21	319	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	144	13	7	94	6	28	116	9	6	84	7
Total Analysis Volume [veh/h]	38	576	54	27	376	24	112	462	37	22	336	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	34	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	39	39	39	39	39	39	17	17	17	17	17	17
g / C, Green / Cycle	0.65	0.65	0.65	0.65	0.65	0.65	0.28	0.28	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.04	0.19	0.19	0.04	0.12	0.12	0.12	0.15	0.15	0.03	0.11	0.11
s, saturation flow rate [veh/h]	883	1676	1627	714	1676	1641	914	1676	1633	806	1676	1635
c, Capacity [veh/h]	607	1090	1057	486	1090	1067	313	475	463	261	475	463
d1, Uniform Delay [s]	6.29	4.54	4.54	7.40	4.17	4.18	21.26	18.14	18.16	20.97	17.30	17.32
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	0.68	0.71	0.22	0.37	0.39	0.69	0.92	0.96	0.14	0.51	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.06	0.29	0.29	0.06	0.18	0.19	0.36	0.53	0.53	0.08	0.38	0.39
d, Delay for Lane Group [s/veh]	6.49	5.22	5.25	7.62	4.55	4.56	21.95	19.07	19.11	21.11	17.81	17.85
Lane Group LOS	A	A	A	A	A	A	C	B	B	C	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.18	1.00	0.98	0.15	0.58	0.57	1.31	2.68	2.63	0.25	1.83	1.81
50th-Percentile Queue Length [ft]	4.47	25.12	24.62	3.76	14.42	14.28	32.84	67.08	65.72	6.14	45.82	45.19
95th-Percentile Queue Length [veh]	0.32	1.81	1.77	0.27	1.04	1.03	2.36	4.83	4.73	0.44	3.30	3.25
95th-Percentile Queue Length [ft]	8.04	45.22	44.32	6.77	25.95	25.71	59.11	120.75	118.29	11.05	82.48	81.34

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	6.49	5.23	5.25	7.62	4.55	4.56	21.95	19.09	19.11	21.11	17.83	17.85
Movement LOS	A	A	A	A	A	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	5.30			4.75			19.62			18.01		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	11.71											
Intersection LOS	B											
Intersection V/C	0.342											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.623

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	2	657	43	82	860	4	10	7	6	44	3	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.86	0.86	0.86	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	138	1021	63	37	886	63	45	118	115	72	150	39
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	1586	100	108	1626	66	55	125	121	116	153	94
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	417	26	28	428	17	14	33	32	31	40	25
Total Analysis Volume [veh/h]	147	1669	105	114	1712	69	58	132	127	122	161	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	23	0	10	22	0	10	21	0	16	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	9	36	36	8	34	34	6	11	11	8	13	13
g / C, Green / Cycle	0.13	0.51	0.51	0.11	0.49	0.49	0.08	0.15	0.15	0.11	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.09	0.37	0.37	0.07	0.37	0.37	0.04	0.04	0.09	0.08	0.08	0.08
s, saturation flow rate [veh/h]	1597	3192	1626	1597	3192	1643	1597	3192	1482	1597	1676	1470
c, Capacity [veh/h]	205	1617	824	177	1561	804	128	495	230	181	315	276
d1, Uniform Delay [s]	29.27	13.47	13.50	29.80	14.47	14.48	30.72	26.06	27.33	29.81	25.11	25.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.61	2.88	5.59	3.89	3.41	6.49	2.48	0.29	2.07	4.35	0.93	1.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

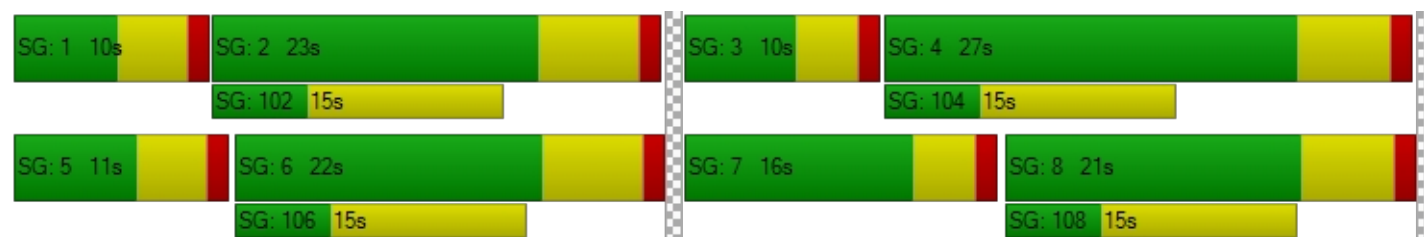
X, volume / capacity	0.72	0.73	0.73	0.64	0.75	0.75	0.45	0.27	0.55	0.68	0.43	0.45
d, Delay for Lane Group [s/veh]	33.89	16.36	19.09	33.69	17.88	20.98	33.21	26.35	29.40	34.16	26.04	26.36
Lane Group LOS	C	B	B	C	B	C	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	2.47	6.44	7.21	1.90	6.86	7.77	0.96	0.92	1.95	2.06	1.92	1.78
50th-Percentile Queue Length [ft]	61.65	160.92	180.21	47.60	171.43	194.17	24.10	23.04	48.80	51.41	47.98	44.59
95th-Percentile Queue Length [veh]	4.44	10.60	11.61	3.43	11.15	12.34	1.74	1.66	3.51	3.70	3.45	3.21
95th-Percentile Queue Length [ft]	110.97	264.95	290.28	85.67	278.79	308.43	43.39	41.47	87.83	92.54	86.36	80.26

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.89	17.17	19.09	33.69	18.85	20.98	33.21	26.35	29.40	34.16	26.09	26.36
Movement LOS	C	B	B	C	B	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.55			19.82			28.82			28.74		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.67											
Intersection LOS	C											
Intersection V/C	0.623											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.680

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	185.00	100.00	100.00	165.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	84	1062	18	11	837	88	284	220	142	16	37	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	0.90	0.90	0.90	0.90	0.90	0.90
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	34	776	0	0	228	0	0	18	25	0	14	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	2199	24	15	1350	118	256	216	153	14	47	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	579	6	4	355	31	67	57	40	4	12	2
Total Analysis Volume [veh/h]	155	2315	25	16	1421	124	269	227	161	15	49	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	32	0	10	32	0	17	38	0	13	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	8	46	46	4	42	42	15	24	24	0	7	7
g / C, Green / Cycle	0.10	0.57	0.57	0.05	0.52	0.52	0.19	0.30	0.30	0.00	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.12	0.48	0.48	0.01	0.32	0.32	0.17	0.07	0.11	0.67	0.02	0.02
s, saturation flow rate [veh/h]	1270	3192	1667	1270	3192	1608	1597	3192	1482	23	1676	1614
c, Capacity [veh/h]	201	1829	956	135	1659	836	299	974	452	90	155	150
d1, Uniform Delay [s]	37.49	14.05	14.08	37.68	13.60	13.60	31.76	20.79	21.66	40.00	33.48	33.49
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.13	4.82	8.90	0.39	1.75	3.43	9.52	0.12	0.47	3.96	0.54	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

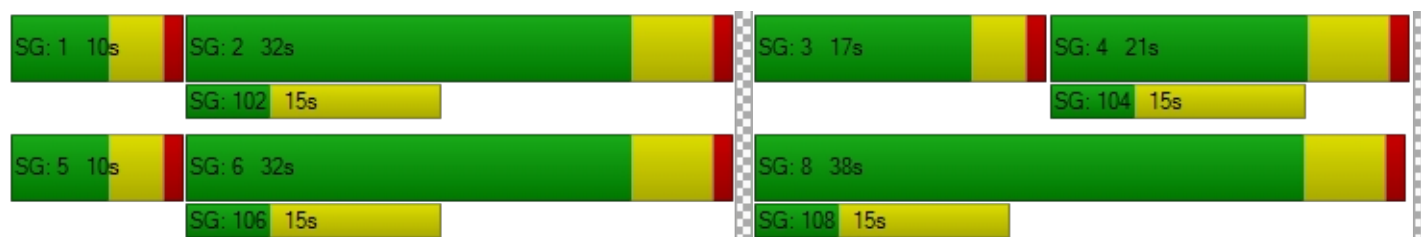
X, volume / capacity	0.77	0.84	0.84	0.12	0.62	0.62	0.90	0.23	0.36	0.17	0.18	0.18
d, Delay for Lane Group [s/veh]	43.62	18.87	22.98	38.07	15.35	17.04	41.28	20.91	22.14	43.96	34.01	34.08
Lane Group LOS	D	B	C	D	B	B	D	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.33	10.30	11.89	0.31	5.95	6.39	5.55	1.50	2.25	0.43	0.50	0.49
50th-Percentile Queue Length [ft]	83.32	257.40	297.26	7.69	148.68	159.68	138.83	37.42	56.19	10.81	12.38	12.35
95th-Percentile Queue Length [veh]	6.00	15.56	17.55	0.55	9.95	10.53	9.42	2.69	4.05	0.78	0.89	0.89
95th-Percentile Queue Length [ft]	149.98	388.96	438.64	13.85	248.67	263.30	235.44	67.35	101.15	19.45	22.29	22.23

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.62	20.25	22.98	38.07	15.82	17.04	41.28	20.91	22.14	43.96	34.04	34.08
Movement LOS	D	C	C	D	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	21.73			16.14			29.55			36.17		
Approach LOS	C			B			C			D		
d_I, Intersection Delay [s/veh]	21.19											
Intersection LOS	C											
Intersection V/C	0.680											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.242

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	17	241	9	20	200	34	105	64	44	9	18	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	0.90	0.90	0.90	0.90	0.90	0.90
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	41	0	0	22	1	0	16	2	0	12	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	405	14	30	324	52	95	74	42	8	28	19
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	107	4	8	85	14	25	19	11	2	7	5
Total Analysis Volume [veh/h]	28	426	15	32	341	55	100	78	44	8	29	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	32	0	0	32	0	0	28	0	0	28	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	30	30	30	30	30	30	26	26	26	26	26	26
g / C, Green / Cycle	0.50	0.50	0.50	0.50	0.50	0.50	0.43	0.43	0.43	0.43	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.04	0.15	0.15	0.04	0.14	0.14	0.09	0.04	0.05	0.01	0.02	0.02
s, saturation flow rate [veh/h]	786	1487	1469	754	1487	1416	1078	1487	1315	1009	1487	1298
c, Capacity [veh/h]	437	743	735	418	743	708	558	644	570	513	644	563
d1, Uniform Delay [s]	11.06	8.81	8.82	11.45	8.67	8.70	11.67	10.06	10.09	11.26	9.80	9.82
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	1.02	1.04	0.36	0.90	0.96	0.70	0.30	0.37	0.06	0.11	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

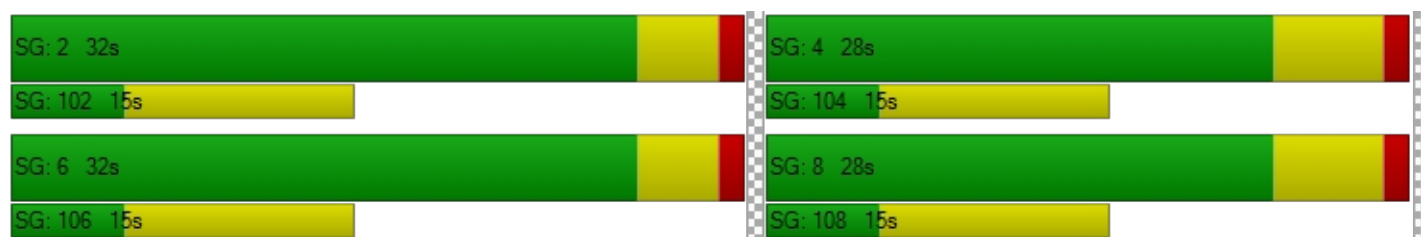
X, volume / capacity	0.06	0.30	0.30	0.08	0.27	0.27	0.18	0.10	0.10	0.02	0.04	0.04
d, Delay for Lane Group [s/veh]	11.34	9.84	9.86	11.80	9.57	9.66	12.38	10.36	10.46	11.31	9.91	9.96
Lane Group LOS	B	A	A	B	A	A	B	B	B	B	A	A
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	0.21	1.39	1.38	0.25	1.24	1.21	0.83	0.45	0.44	0.06	0.17	0.17
50th-Percentile Queue Length [ft]	5.32	34.83	34.61	6.28	31.06	30.34	20.82	11.32	10.96	1.58	4.33	4.34
95th-Percentile Queue Length [veh]	0.38	2.51	2.49	0.45	2.24	2.18	1.50	0.81	0.79	0.11	0.31	0.31
95th-Percentile Queue Length [ft]	9.57	62.69	62.29	11.31	55.91	54.62	37.47	20.37	19.72	2.84	7.80	7.82

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	11.34	9.85	9.86	11.80	9.61	9.66	12.38	10.38	10.46	11.31	9.92	9.96
Movement LOS	B	A	A	B	A	A	B	B	B	B	A	A
d_A, Approach Delay [s/veh]	9.94			9.78			11.29			10.13		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	10.14											
Intersection LOS	B											
Intersection V/C	0.242											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	48.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.003

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	706	4	474	0	1366	521	225	1191	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	379	0	0	270	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	706	4	474	0	1567	453	196	1306	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	186	1	125	0	412	119	52	344	0	0	0	0
Total Analysis Volume [veh/h]	743	4	499	0	1649	477	206	1375	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	39	0	0	51	0	10	61	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	37	37	37	49	49	8	59
g / C, Green / Cycle	0.37	0.37	0.37	0.49	0.49	0.08	0.59
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.39	0.50	0.53	0.07	0.34
s, saturation flow rate [veh/h]	1416	1417	1264	2831	1329	2750	4050
c, Capacity [veh/h]	524	524	468	1387	651	220	2390
d1, Uniform Delay [s]	26.95	26.95	31.50	25.50	25.50	45.75	12.72
k, delay calibration	0.30	0.30	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.88	4.86	60.64	29.78	61.63	16.49	1.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

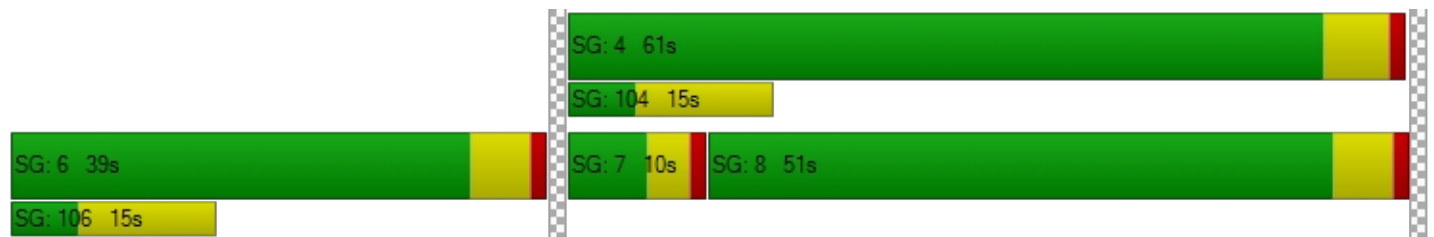
X, volume / capacity	0.71	0.71	1.07	1.02	1.09	0.94	0.58
d, Delay for Lane Group [s/veh]	31.83	31.81	92.14	55.28	87.13	62.24	13.74
Lane Group LOS	C	C	F	F	F	E	B
Critical Lane Group	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	7.89	7.89	18.39	20.47	24.98	2.98	5.81
50th-Percentile Queue Length [ft]	197.36	197.28	459.76	511.66	624.44	74.44	145.28
95th-Percentile Queue Length [veh]	12.50	12.50	26.55	28.35	35.33	5.36	9.76
95th-Percentile Queue Length [ft]	312.56	312.46	663.66	708.73	883.24	134.00	244.12

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.82	31.81	92.14	0.00	59.76	87.13	62.24	13.74	0.00	0.00	0.00	0.00
Movement LOS	C	C	F		E	F	E	B				
d_A, Approach Delay [s/veh]	55.98			65.90			20.06			0.00		
Approach LOS	E			E			C			A		
d_I, Intersection Delay [s/veh]	48.77											
Intersection LOS	D											
Intersection V/C	1.003											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.976

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Base Volume Input [veh/h]	372	108	189	83	0	423	295	1490	298	0	1372	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	1.00	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	379	0	0	270	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	372	108	189	83	0	423	257	1675	259	0	1464	31
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	98	28	50	22	0	111	68	441	68	0	385	8
Total Analysis Volume [veh/h]	392	114	199	87	0	445	271	1763	273	0	1541	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Permiss	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups						1,3						
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	10	0	20	20	49	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No		No	No	No			No	
Maximum Recall		No		No		No	No	No			No	
Pedestrian Recall		No		No		No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	8	49	18	47	27	27
g / C, Green / Cycle	0.24	0.24	0.24	0.10	0.61	0.23	0.59	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.22	0.21	0.16	0.06	0.35	0.19	0.44	0.29	0.27
s, saturation flow rate [veh/h]	1127	1277	1264	1416	1264	1416	4050	4050	1465
c, Capacity [veh/h]	344	374	300	142	739	319	2380	1367	495
d1, Uniform Delay [s]	30.62	29.16	27.60	34.52	10.63	29.71	12.05	24.78	24.00
k, delay calibration	0.14	0.12	0.11	0.11	0.41	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.39	2.70	2.51	4.27	2.94	6.35	2.12	7.43	12.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

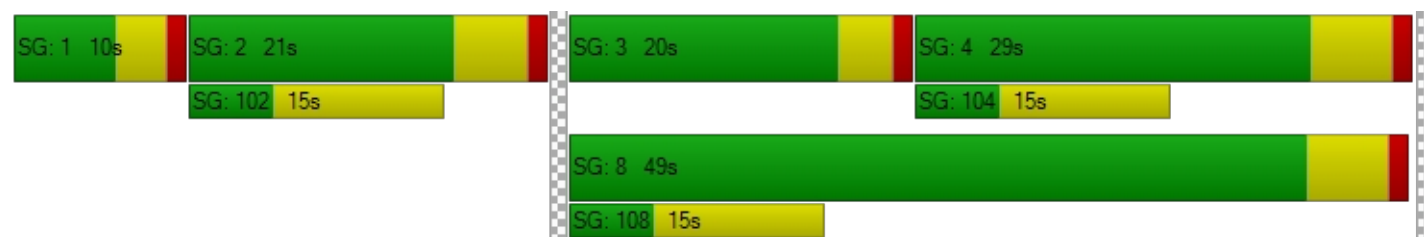
X, volume / capacity	0.71	0.70	0.66	0.61	0.60	0.85	0.74	0.86	0.80
d, Delay for Lane Group [s/veh]	34.01	31.86	30.11	38.79	13.57	36.06	14.18	32.21	36.48
Lane Group LOS	C	C	C	D	B	D	B	C	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	4.62	4.79	3.42	1.71	4.65	5.21	6.53	7.26	7.84
50th-Percentile Queue Length [ft]	115.40	119.68	85.57	42.81	116.14	130.37	163.34	181.58	195.98
95th-Percentile Queue Length [veh]	8.14	8.38	6.16	3.08	8.18	8.96	10.73	11.68	12.43
95th-Percentile Queue Length [ft]	203.49	209.38	154.02	77.06	204.51	224.00	268.14	292.08	310.77

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.20	31.86	30.11	38.79	0.00	13.57	36.06	14.18	0.00	0.00	33.21	36.48
Movement LOS	C	C	C	D		B	D	B			C	D
d_A, Approach Delay [s/veh]	32.10			17.70			17.09			33.28		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	24.60											
Intersection LOS	C											
Intersection V/C	0.976											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	61	472	57	38	437	122	87	905	106	53	742	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	379	0	0	270	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	472	57	38	437	122	76	1166	92	46	916	42
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	124	15	10	115	32	20	307	24	12	241	11
Total Analysis Volume [veh/h]	64	497	60	40	460	128	80	1227	97	48	964	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	11	21	0	11	21	0	24	38	11	10	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	21	21	5	21	21	7	40	48	5	39	39
g / C, Green / Cycle	0.08	0.27	0.27	0.06	0.26	0.26	0.09	0.50	0.60	0.07	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.05	0.18	0.05	0.03	0.20	0.21	0.06	0.43	0.04	0.03	0.34	0.34
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1377	1416	2831	2237	1416	1487	1464
c, Capacity [veh/h]	107	757	338	92	382	354	123	1412	1279	98	715	704
d1, Uniform Delay [s]	35.81	26.05	22.55	35.98	27.77	27.84	35.35	17.74	7.67	35.89	16.37	16.37
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.12	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.27	0.98	0.25	3.20	4.10	4.75	5.68	7.50	0.02	3.78	5.91	6.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.60	0.66	0.18	0.43	0.80	0.80	0.65	0.87	0.08	0.49	0.71	0.71
d, Delay for Lane Group [s/veh]	41.07	27.03	22.80	39.18	31.87	32.58	41.03	25.24	7.69	39.67	22.28	22.37
Lane Group LOS	D	C	C	D	C	C	D	C	A	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.31	4.00	0.84	0.80	5.47	5.18	1.63	9.91	0.32	0.97	7.48	7.38
50th-Percentile Queue Length [ft]	32.76	100.06	20.96	20.00	136.64	129.53	40.84	247.82	7.94	24.13	186.91	184.52
95th-Percentile Queue Length [veh]	2.36	7.20	1.51	1.44	9.30	8.91	2.94	15.08	0.57	1.74	11.96	11.84
95th-Percentile Queue Length [ft]	58.96	180.10	37.72	36.00	232.49	222.86	73.52	376.91	14.30	43.43	299.01	295.90

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	41.07	27.03	22.80	39.18	32.11	32.58	41.03	25.24	7.69	39.67	22.32	22.37
Movement LOS	D	C	C	D	C	C	D	C	A	D	C	C
d_A, Approach Delay [s/veh]	28.07			32.66			24.93			23.11		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.25											
Intersection LOS	C											
Intersection V/C	0.719											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	40.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.836

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	2	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	70	844	366	81	708	152	242	680	103	241	454	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	379	0	0	270	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	844	366	81	708	152	211	971	90	210	665	62
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	222	96	21	186	40	56	256	24	55	175	16
Total Analysis Volume [veh/h]	74	888	385	85	745	160	222	1022	95	221	700	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	32	0	10	32	0	21	38	0	10	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	30	30	8	31	31	17	36	36	8	27	27
g / C, Green / Cycle	0.08	0.34	0.34	0.09	0.34	0.34	0.19	0.40	0.40	0.09	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.05	0.31	0.30	0.06	0.26	0.13	0.16	0.38	0.38	0.08	0.25	0.05
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1443	2750	2831	1264
c, Capacity [veh/h]	110	950	424	122	974	435	266	594	577	248	854	381
d1, Uniform Delay [s]	40.42	28.94	28.56	40.01	26.27	22.17	35.19	26.19	26.25	40.51	29.15	23.14
k, delay calibration	0.11	0.11	0.39	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.05	4.99	21.35	7.08	1.28	0.52	6.72	26.84	28.09	10.60	8.65	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

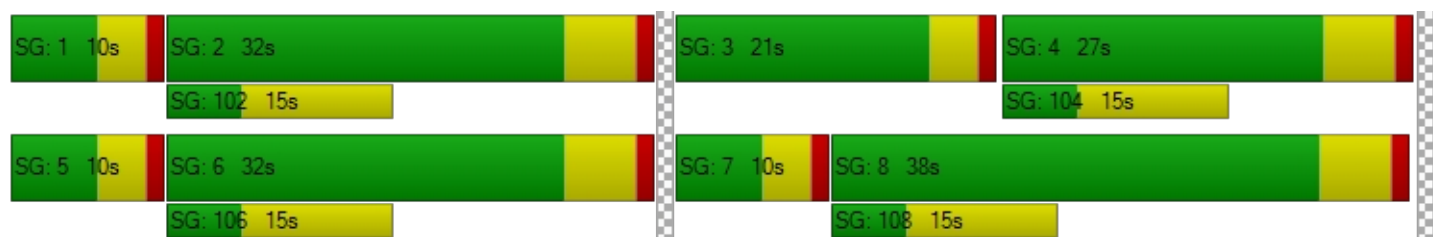
X, volume / capacity	0.68	0.93	0.91	0.70	0.76	0.37	0.83	0.95	0.96	0.89	0.82	0.17
d, Delay for Lane Group [s/veh]	47.47	33.93	49.91	47.09	27.56	22.69	41.91	53.03	54.35	51.11	37.81	24.10
Lane Group LOS	D	C	D	D	C	C	D	D	D	D	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.76	9.24	9.86	2.00	6.77	2.45	4.97	15.09	14.92	2.70	7.59	1.07
50th-Percentile Queue Length [ft]	43.89	230.95	246.44	50.10	169.20	61.31	124.14	377.26	372.88	67.44	189.77	26.75
95th-Percentile Queue Length [veh]	3.16	14.22	15.01	3.61	11.03	4.41	8.62	21.46	21.25	4.86	12.11	1.93
95th-Percentile Queue Length [ft]	79.00	355.57	375.17	90.18	275.86	110.36	215.50	536.52	531.23	121.40	302.73	48.15

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	47.47	33.93	49.91	47.09	27.56	22.69	41.91	53.62	54.35	51.11	37.81	24.10
Movement LOS	D	C	D	D	C	C	D	D	D	D	D	C
d_A, Approach Delay [s/veh]	39.24			28.45			51.73			39.89		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	40.67											
Intersection LOS	D											
Intersection V/C	0.836											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.483

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	28	74	30	85	97	108	137	901	37	24	386	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.11	1.11	1.11	1.11	1.11	1.11
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	379	0	0	270	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	74	30	85	97	108	152	1379	41	27	698	56
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	19	8	22	26	28	40	363	11	7	184	15
Total Analysis Volume [veh/h]	29	78	32	89	102	114	160	1452	43	28	735	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	18	29	0	10	21	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	9	9	7	11	11	11	42	42	4	36	36
g / C, Green / Cycle	0.06	0.13	0.13	0.09	0.16	0.16	0.15	0.60	0.60	0.06	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.03	0.06	0.07	0.09	0.11	0.35	0.35	0.02	0.19	0.19
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1465	1416	2831	1431
c, Capacity [veh/h]	89	187	159	134	235	200	215	1708	884	88	1452	734
d1, Uniform Delay [s]	31.40	28.23	27.44	30.59	26.63	27.26	28.38	8.45	8.46	31.43	10.20	10.21
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	1.48	0.61	5.47	1.26	2.55	5.02	1.43	2.74	2.07	0.70	1.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.33	0.42	0.20	0.66	0.43	0.57	0.74	0.58	0.58	0.32	0.36	0.36
d, Delay for Lane Group [s/veh]	33.51	29.70	28.06	36.06	27.89	29.81	33.40	9.88	11.20	33.50	10.90	11.61
Lane Group LOS	C	C	C	D	C	C	C	A	B	C	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.49	1.20	0.48	1.56	1.51	1.78	2.67	3.63	4.08	0.48	2.12	2.30
50th-Percentile Queue Length [ft]	12.33	30.04	11.90	38.98	37.76	44.39	66.80	90.82	102.10	11.91	52.99	57.58
95th-Percentile Queue Length [veh]	0.89	2.16	0.86	2.81	2.72	3.20	4.81	6.54	7.35	0.86	3.82	4.15
95th-Percentile Queue Length [ft]	22.19	54.08	21.41	70.17	67.98	79.91	120.23	163.48	183.77	21.43	95.38	103.65

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.51	29.70	28.06	36.06	27.89	29.81	33.40	10.30	11.20	33.50	11.10	11.61
Movement LOS	C	C	C	D	C	C	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	30.12			31.00			12.56			11.90		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.13											
Intersection LOS	B											
Intersection V/C	0.483											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.824

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	99	902	55	61	865	111	216	371	159	34	172	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	1.11	1.11	1.11	1.11	1.11	1.11
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	81	809	4	3	251	0	0	362	40	3	246	2
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	214	2018	78	85	1410	149	240	774	216	41	437	42
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	531	21	22	371	39	63	204	57	11	115	11
Total Analysis Volume [veh/h]	225	2124	82	89	1484	157	253	815	227	43	460	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	29	0	10	29	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	29	29	6	28	28	19	19	19	19	19	19
g / C, Green / Cycle	0.12	0.48	0.48	0.10	0.46	0.46	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.47	0.06	0.06	0.32	0.11	0.30	0.22	0.22	0.09	0.10	0.03
s, saturation flow rate [veh/h]	3101	4567	1425	1597	4567	1425	835	3192	1496	485	4567	1425
c, Capacity [veh/h]	376	2193	684	165	2109	658	307	1011	474	172	1446	451
d1, Uniform Delay [s]	24.97	15.15	8.60	25.56	12.87	9.76	25.04	18.01	18.02	26.30	15.58	14.45
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.16	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.52	13.11	0.36	2.74	1.99	0.85	8.07	0.90	1.91	0.76	0.13	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

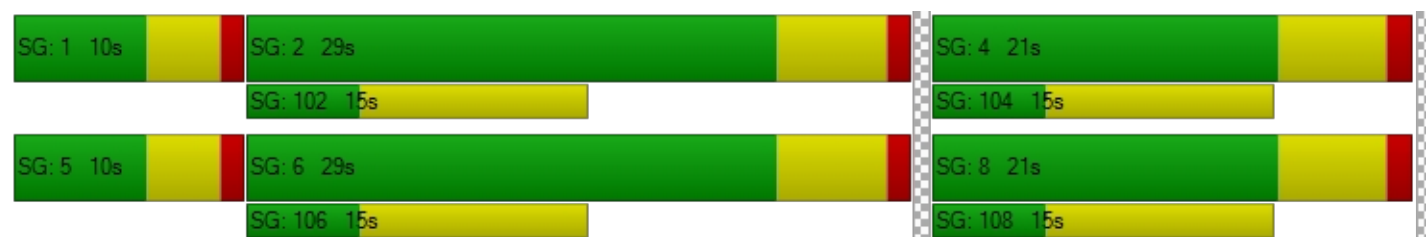
X, volume / capacity	0.60	0.97	0.12	0.54	0.70	0.24	0.82	0.70	0.70	0.25	0.32	0.10
d, Delay for Lane Group [s/veh]	26.49	28.27	8.96	28.30	14.86	10.62	33.11	18.91	19.93	27.05	15.70	14.55
Lane Group LOS	C	C	A	C	B	B	C	B	B	C	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	1.45	9.69	0.53	1.22	4.51	1.15	4.06	3.80	3.70	0.58	1.39	0.38
50th-Percentile Queue Length [ft]	36.29	242.22	13.25	30.53	112.79	28.72	101.50	94.90	92.46	14.54	34.74	9.43
95th-Percentile Queue Length [veh]	2.61	14.79	0.95	2.20	8.00	2.07	7.31	6.83	6.66	1.05	2.50	0.68
95th-Percentile Queue Length [ft]	65.32	369.85	23.84	54.96	199.88	51.69	182.70	170.82	166.43	26.16	62.53	16.97

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.49	28.27	8.96	28.30	14.86	10.62	33.11	19.04	19.93	27.05	15.70	14.55
Movement LOS	C	C	A	C	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	27.45			15.17			21.94			16.50		
Approach LOS	C			B			C			B		
d_I, Intersection Delay [s/veh]	21.73											
Intersection LOS	C											
Intersection V/C	0.824											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	10.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.274

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↵			↵ ↑ ↵			↵ ↑ ↑ ↑ ↵			↵ ↑ ↑ ↑ ↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	12	177	52	61	173	33	48	401	17	28	189	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	16	3	21	0	0	411	0	14	282	2
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	307	95	95	282	50	48	812	17	42	471	19
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	81	25	25	74	13	13	214	4	11	124	5
Total Analysis Volume [veh/h]	19	323	100	100	297	53	51	855	18	44	496	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	30	0	0	30	0	0	30	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	28	28	28	28	28	28	28	28	28	28	28	28
g / C, Green / Cycle	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.02	0.13	0.13	0.12	0.11	0.11	0.06	0.14	0.14	0.08	0.08	0.08
s, saturation flow rate [veh/h]	924	1676	1544	864	1676	1590	793	4567	1654	569	4567	1634
c, Capacity [veh/h]	476	782	720	438	782	742	438	2131	772	326	2131	763
d1, Uniform Delay [s]	11.57	9.81	9.84	13.54	9.55	9.57	11.50	9.92	9.93	13.21	9.30	9.32
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	0.88	0.99	1.21	0.68	0.73	0.54	0.36	1.00	0.86	0.18	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

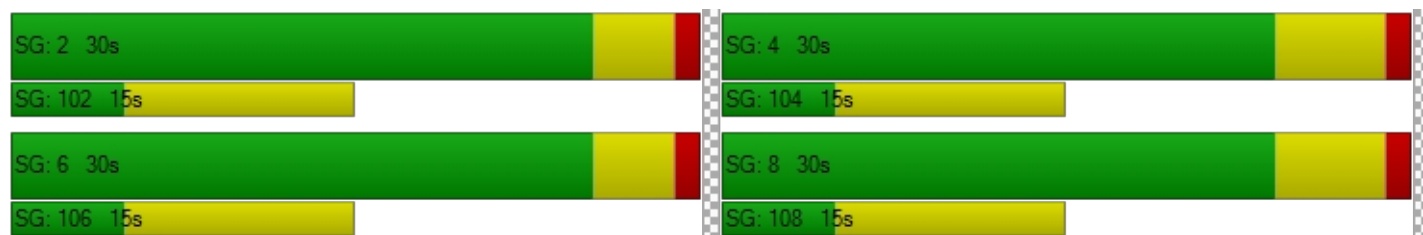
X, volume / capacity	0.04	0.28	0.28	0.23	0.23	0.23	0.12	0.30	0.30	0.13	0.18	0.18
d, Delay for Lane Group [s/veh]	11.73	10.69	10.83	14.75	10.23	10.30	12.04	10.29	10.93	14.07	9.49	9.83
Lane Group LOS	B	B	B	B	B	B	B	B	B	B	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.15	1.47	1.41	0.91	1.16	1.13	0.43	1.45	1.72	0.43	0.80	0.94
50th-Percentile Queue Length [ft]	3.65	36.68	35.13	22.73	29.11	28.27	10.70	36.24	42.97	10.63	20.00	23.54
95th-Percentile Queue Length [veh]	0.26	2.64	2.53	1.64	2.10	2.04	0.77	2.61	3.09	0.77	1.44	1.69
95th-Percentile Queue Length [ft]	6.57	66.02	63.24	40.92	52.39	50.89	19.26	65.22	77.34	19.13	36.01	42.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	11.73	10.74	10.83	14.75	10.25	10.30	12.04	10.45	10.93	14.07	9.57	9.83
Movement LOS	B	B	B	B	B	B	B	B	B	B	A	A
d_A, Approach Delay [s/veh]	10.80			11.26			10.55			9.93		
Approach LOS	B			B			B			A		
d_I, Intersection Delay [s/veh]	10.58											
Intersection LOS	B											
Intersection V/C	0.274											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	42.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.880

**Intersection Setup**

Name	Archibald Ave			Edison Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	500.00	100.00	280.00	100.00	100.00	100.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	40.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Edison Ave			Edison Ave					
Base Volume Input [veh/h]	43	544	164	36	812	52	97	314	115	256	145	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	307	1390	425	16	1194	117	96	358	325	298	271	12
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	341	1814	553	44	1827	158	193	672	440	554	416	47
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	477	146	12	481	42	51	177	116	146	109	12
Total Analysis Volume [veh/h]	359	1909	582	46	1923	166	203	707	463	583	438	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	55	24	10	48	0	24	21	17	24	21	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	15	55	6	46	46	11	19	22	30	30
g / C, Green / Cycle	0.14	0.50	0.06	0.42	0.42	0.10	0.17	0.20	0.28	0.28
(v / s)_j Volume / Saturation Flow Rate	0.12	0.42	0.01	0.42	0.12	0.07	0.15	0.19	0.10	0.03
s, saturation flow rate [veh/h]	3101	4567	3101	4567	1425	3101	4567	3101	4567	1425
c, Capacity [veh/h]	423	2267	180	1910	596	301	789	620	1259	393
d1, Uniform Delay [s]	46.39	23.97	49.52	32.00	21.07	47.99	44.54	43.35	31.91	29.88
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.83	4.01	0.74	22.29	1.16	2.64	3.93	7.67	0.16	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

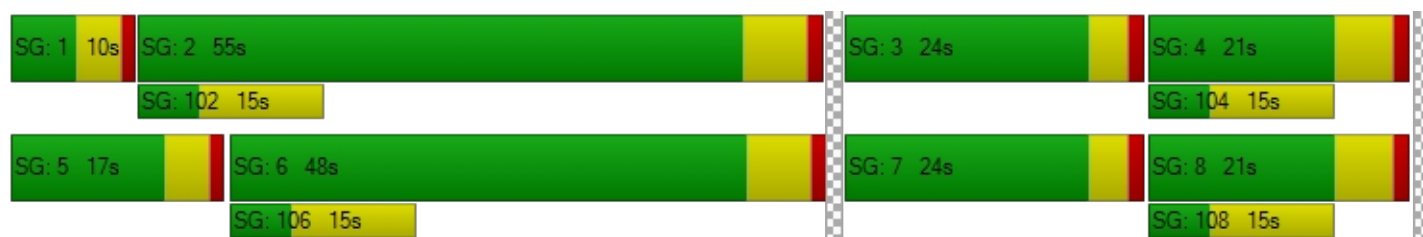
X, volume / capacity	0.85	0.84	0.26	1.01	0.28	0.68	0.90	0.94	0.35	0.12
d, Delay for Lane Group [s/veh]	51.22	27.98	50.26	54.29	22.24	50.64	48.47	51.02	32.07	30.02
Lane Group LOS	D	C	D	F	C	D	D	D	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	4.96	14.01	0.61	19.49	2.86	2.72	6.34	8.16	3.01	0.96
50th-Percentile Queue Length [ft]	124.08	350.36	15.18	487.30	71.57	68.05	158.53	203.90	75.36	23.91
95th-Percentile Queue Length [veh]	8.62	20.15	1.09	26.87	5.15	4.90	10.47	12.84	5.43	1.72
95th-Percentile Queue Length [ft]	215.42	503.85	27.32	671.72	128.82	122.49	261.78	320.99	135.64	43.04

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	51.22	27.98	0.00	50.26	54.29	22.24	50.64	48.47	0.00	51.02	32.07	30.02
Movement LOS	D	C		D	F	C	D	D		D	C	C
d_A, Approach Delay [s/veh]	31.66			51.71			48.95			42.30		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	42.62											
Intersection LOS	D											
Intersection V/C	0.880											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	58.2
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.840

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	240.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	70	241	141	281	374	39	28	355	179	296	295	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.12	1.12	1.12	0.72	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	34	450	427	175	395	208	109	1534	81	269	1758	196
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	104	691	568	456	769	247	140	1932	281	482	1970	247
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	182	149	120	202	65	37	508	74	127	518	65
Total Analysis Volume [veh/h]	109	727	598	480	809	260	147	2034	296	507	2074	260
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	10	24	18	16	30	10	10	42	10	18	50	16
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	8	22	40	14	28	38	8	40	50	16	48	64
g / C, Green / Cycle	0.08	0.22	0.40	0.14	0.28	0.38	0.08	0.40	0.50	0.16	0.48	0.64
(v / s)_i Volume / Saturation Flow Rate	0.04	0.23	0.42	0.15	0.18	0.18	0.05	0.45	0.21	0.16	0.45	0.18
s, saturation flow rate [veh/h]	3101	3192	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	248	702	539	434	1279	510	248	1827	681	496	2192	881
d1, Uniform Delay [s]	43.86	39.00	31.10	43.00	31.50	25.21	44.43	30.00	17.20	42.00	24.77	8.92
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.16	0.11	0.11	0.22	0.11	0.11	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.22	43.39	72.58	55.61	2.39	1.19	2.25	53.08	0.91	24.56	2.80	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.44	1.04	1.11	1.11	0.63	0.51	0.59	1.11	0.43	1.02	0.95	0.30
d, Delay for Lane Group [s/veh]	45.08	82.39	103.68	98.61	33.89	26.40	46.68	83.08	18.11	66.56	27.56	9.20
Lane Group LOS	D	F	F	F	C	C	D	F	B	F	C	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	1.30	12.48	22.93	8.54	5.74	4.78	1.79	22.50	4.34	7.60	14.63	2.38
50th-Percentile Queue Length [ft]	32.43	312.07	573.31	213.48	143.59	119.46	44.80	562.62	108.56	189.92	365.86	59.53
95th-Percentile Queue Length [veh]	2.33	18.63	33.05	13.91	9.67	8.36	3.23	32.57	7.76	12.24	20.91	4.29
95th-Percentile Queue Length [ft]	58.37	465.63	826.26	347.66	241.85	209.09	80.64	814.17	194.00	305.94	522.71	107.16

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	45.08	82.39	103.68	98.61	33.89	26.40	46.68	83.08	18.11	66.56	27.56	9.20
Movement LOS	D	F	F	F	C	C	D	F	B	F	C	A
d_A, Approach Delay [s/veh]	88.43			52.69			73.16			32.84		
Approach LOS	F			D			E			C		
d_I, Intersection Delay [s/veh]	58.18											
Intersection LOS	E											
Intersection V/C	0.840											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	6.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				⇐⇐⇐			⇐⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	0	0	0	318	0	500	0	495	308	0	198	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.72	1.00	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	1044	0	2041	376	0	1133	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	318	0	1544	0	2397	598	0	1276	130
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	84	0	406	0	631	157	0	336	34
Total Analysis Volume [veh/h]	0	0	0	335	0	1625	0	2523	629	0	1343	137
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal group	0	0	0	1	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	4.4	0.0	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	37	0	0	0	23	0	0	23	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	10	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	C
C, Cycle Length [s]		60	60	60
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00
g_i, Effective Green Time [s]		11	45	45
g / C, Green / Cycle		0.19	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate		0.11	0.55	0.42
s, saturation flow rate [veh/h]		3101	4567	3192
c, Capacity [veh/h]		589	3395	2373
d1, Uniform Delay [s]		22.07	4.41	3.41
k, delay calibration		0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00
d2, Incremental Delay [s]		0.87	1.51	0.98
d3, Initial Queue Delay [s]		0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity		0.57	0.74	0.57
d, Delay for Lane Group [s/veh]		22.94	5.93	4.39
Lane Group LOS		C	A	A
Critical Lane Group		Yes	Yes	No
50th-Percentile Queue Length [veh]		2.07	3.04	1.91
50th-Percentile Queue Length [ft]		51.74	76.05	47.68
95th-Percentile Queue Length [veh]		3.73	5.48	3.43
95th-Percentile Queue Length [ft]		93.14	136.90	85.83

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	22.94	0.00	0.00	0.00	5.93	0.00	0.00	4.39	0.00
Movement LOS				C				A			A	
d_A, Approach Delay [s/veh]	0.00			22.94			5.93			4.39		
Approach LOS	A			C			A			A		
d_I, Intersection Delay [s/veh]	6.79											
Intersection LOS	A											
Intersection V/C	0.661											

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	51.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.400

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	95	81	468	380	241	272
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	0.72	0.72	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	551	0	729	1262	0	582
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	646	81	1066	1536	174	778
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	170	21	281	404	46	205
Total Analysis Volume [veh/h]	680	85	1122	1617	183	819
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	24	0	36	24	0	36
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	22	22	22	34	58	34	34
g / C, Green / Cycle	0.37	0.37	0.37	0.57	0.97	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.21	0.21	0.06	0.25	1.13	0.21	0.18
s, saturation flow rate [veh/h]	1597	1597	1425	4567	1425	874	4567
c, Capacity [veh/h]	585	585	523	2588	1287	479	2588
d1, Uniform Delay [s]	15.29	15.29	12.80	7.47	2.90	13.17	6.86
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.92	0.92	0.14	0.53	121.77	2.30	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.58	0.58	0.16	0.43	1.26	0.38	0.32
d, Delay for Lane Group [s/veh]	16.20	16.20	12.94	8.00	124.67	15.47	7.19
Lane Group LOS	B	B	B	A	F	B	A
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.46	3.46	0.71	2.28	43.54	0.96	1.52
50th-Percentile Queue Length [ft]	86.57	86.57	17.86	56.95	1088.50	23.89	38.00
95th-Percentile Queue Length [veh]	6.23	6.23	1.29	4.10	66.02	1.72	2.74
95th-Percentile Queue Length [ft]	155.83	155.83	32.15	102.52	1650.59	43.01	68.41

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.20	12.94	8.00	124.67	15.47	7.19
Movement LOS	B	B	A	F	B	A
d_A, Approach Delay [s/veh]	15.84		76.88		8.70	
Approach LOS	B		E		A	
d_I, Intersection Delay [s/veh]	51.35					
Intersection LOS	D					
Intersection V/C	0.400					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	98	980	8	15	1018	49	46	42	185	0	6	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	52	859	0	54	240	0	0	8	48	0	5	34
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	2221	11	75	1655	68	46	50	233	0	11	42
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	584	3	20	436	18	12	13	61	0	3	11
Total Analysis Volume [veh/h]	198	2338	12	79	1742	72	48	53	245	0	12	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	13	21	0	18	26	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	34	34	6	30	30	14	14	14	14	14	14
g / C, Green / Cycle	0.17	0.56	0.56	0.10	0.50	0.50	0.24	0.24	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.12	0.38	0.38	0.05	0.29	0.29	0.04	0.03	0.17	0.00	0.01	0.03
s, saturation flow rate [veh/h]	1597	4567	1671	1597	4567	1633	1208	1676	1482	969	1676	1425
c, Capacity [veh/h]	267	2564	938	160	2259	808	362	399	353	193	399	340
d1, Uniform Delay [s]	23.77	9.26	9.26	25.55	10.82	10.82	19.98	17.98	20.86	0.00	17.53	17.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.07	1.42	3.82	2.34	1.15	3.17	0.16	0.15	2.45	0.00	0.03	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

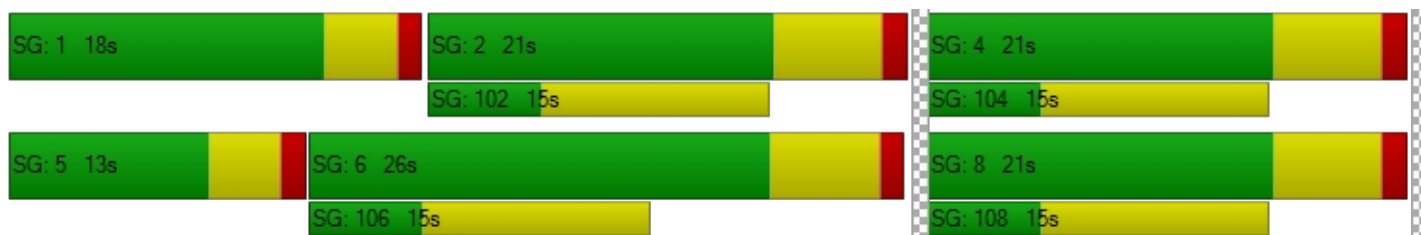
X, volume / capacity	0.74	0.67	0.67	0.49	0.59	0.59	0.13	0.13	0.69	0.00	0.03	0.13
d, Delay for Lane Group [s/veh]	27.83	10.68	13.08	27.89	11.97	13.99	20.14	18.12	23.31	0.00	17.56	18.13
Lane Group LOS	C	B	B	C	B	B	C	B	C	A	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	2.79	4.38	5.44	1.07	3.44	4.14	0.52	0.53	2.99	0.00	0.12	0.44
50th-Percentile Queue Length [ft]	69.69	109.61	136.01	26.87	85.92	103.54	12.90	13.22	74.71	0.00	2.91	11.03
95th-Percentile Queue Length [veh]	5.02	7.82	9.27	1.93	6.19	7.45	0.93	0.95	5.38	0.00	0.21	0.79
95th-Percentile Queue Length [ft]	125.45	195.47	231.64	48.37	154.66	186.36	23.22	23.80	134.48	0.00	5.24	19.85

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.83	11.31	13.08	27.89	12.44	13.99	20.14	18.12	23.31	0.00	17.56	18.13
Movement LOS	C	B	B	C	B	B	C	B	C	A	B	B
d_A, Approach Delay [s/veh]	12.60			13.15			22.07			18.01		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	13.55											
Intersection LOS	B											
Intersection V/C	0.592											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	6.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.133

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↱			↵↱			↵↱			↵↱		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	2	208	0	3	197	8	27	0	21	1	3	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	87	30	0	49	0	0	62	0	30	39	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	295	30	3	246	8	27	62	21	31	42	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	78	8	1	65	2	7	16	6	8	11	1
Total Analysis Volume [veh/h]	2	311	32	3	259	8	28	65	22	33	44	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	0	35	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	48	48	48	48	48	48	8	8	8	8	8	8
g / C, Green / Cycle	0.80	0.80	0.80	0.80	0.80	0.80	0.14	0.14	0.14	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.00	0.10	0.10	0.00	0.08	0.08	0.02	0.03	0.03	0.03	0.01	0.02
s, saturation flow rate [veh/h]	997	1676	1623	930	1676	1659	1216	1676	1538	1174	1676	1618
c, Capacity [veh/h]	866	1334	1291	809	1334	1320	261	231	212	244	231	223
d1, Uniform Delay [s]	1.91	1.40	1.40	2.02	1.36	1.36	23.98	22.91	22.95	24.70	22.64	22.65
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.20	0.21	0.01	0.15	0.15	0.18	0.40	0.47	0.25	0.20	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

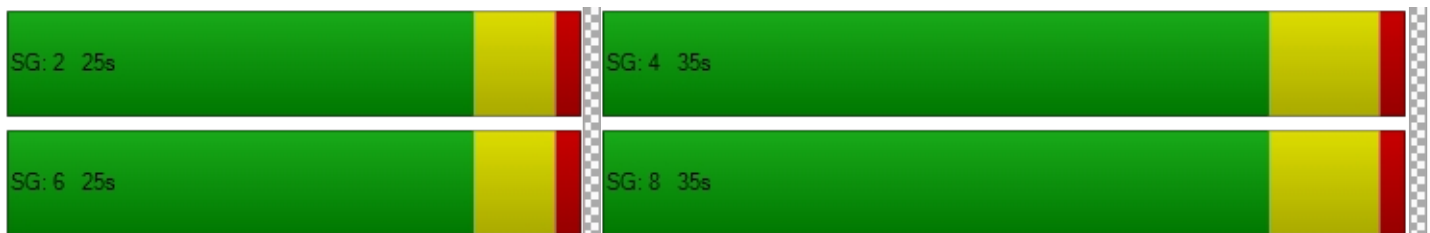
X, volume / capacity	0.00	0.13	0.13	0.00	0.10	0.10	0.11	0.19	0.20	0.14	0.11	0.11
d, Delay for Lane Group [s/veh]	1.92	1.60	1.61	2.03	1.51	1.51	24.16	23.31	23.42	24.95	22.84	22.87
Lane Group LOS	A	A	A	A	A	A	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	No	No	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.00	0.08	0.08	0.00	0.06	0.06	0.34	0.52	0.52	0.41	0.29	0.29
50th-Percentile Queue Length [ft]	0.07	2.06	2.09	0.12	1.54	1.55	8.50	13.11	12.94	10.27	7.22	7.19
95th-Percentile Queue Length [veh]	0.01	0.15	0.15	0.01	0.11	0.11	0.61	0.94	0.93	0.74	0.52	0.52
95th-Percentile Queue Length [ft]	0.13	3.71	3.75	0.21	2.77	2.79	15.31	23.60	23.30	18.48	12.99	12.95

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	1.92	1.60	1.61	2.03	1.51	1.51	24.16	23.34	23.42	24.95	22.85	22.87
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	1.61			1.52			23.56			23.70		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	6.92											
Intersection LOS	A											
Intersection V/C	0.133											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

**Intersection Setup**

Name	Eucalyptus Ave					
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↩↪		↩		↩	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Eucalyptus Ave					
Base Volume Input [veh/h]	9	4	1	6	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	82	0	0	69
Total Hourly Volume [veh/h]	9	4	83	6	0	69
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	22	2	0	18
Total Analysis Volume [veh/h]	9	4	87	6	0	73
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.45	8.72	0.00	0.00	7.55	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.03	0.01	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.83	0.31	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.22		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.67					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	0	0	0	1	0	1
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	1	1045	159	239	851	1	17	37	7	116	1	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	21	161	184	74	0	0	0	0	414	0	696
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1474	382	516	1257	1	17	37	7	530	1	797
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	388	101	136	331	0	4	10	2	139	0	210
Total Analysis Volume [veh/h]	1	1552	402	543	1323	1	18	39	7	558	1	839
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	11	22	0	16	27	0	0	22	0	0	22	16
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	L	C	R
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	2	20	20	14	32	32	20	20	20	36
g / C, Green / Cycle	0.04	0.33	0.33	0.23	0.53	0.53	0.33	0.33	0.33	0.60
(v / s)_i Volume / Saturation Flow Rate	0.00	0.34	0.28	0.18	0.21	0.21	0.04	0.24	0.00	0.59
s, saturation flow rate [veh/h]	1597	4567	1425	3101	4567	1676	1606	2367	1676	1425
c, Capacity [veh/h]	64	1522	475	723	2406	883	612	808	559	803
d1, Uniform Delay [s]	27.68	20.00	18.57	21.38	8.52	8.52	13.85	19.74	13.34	13.10
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	28.10	16.79	1.59	0.50	1.37	0.07	1.06	0.00	44.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

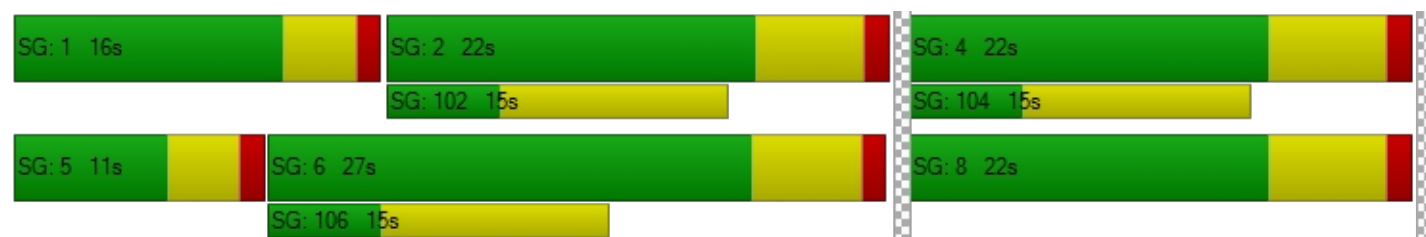
X, volume / capacity	0.02	1.02	0.85	0.75	0.40	0.40	0.10	0.69	0.00	1.05
d, Delay for Lane Group [s/veh]	27.78	48.10	35.36	22.97	9.03	9.89	13.93	20.81	13.34	57.29
Lane Group LOS	C	F	D	C	A	A	B	C	B	F
Critical Lane Group	No	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.01	9.88	6.57	3.27	1.97	2.38	0.53	3.38	0.01	17.93
50th-Percentile Queue Length [ft]	0.36	246.94	164.21	81.68	49.24	59.50	13.24	84.54	0.21	448.25
95th-Percentile Queue Length [veh]	0.03	15.21	10.77	5.88	3.55	4.28	0.95	6.09	0.02	25.76
95th-Percentile Queue Length [ft]	0.65	380.25	269.29	147.03	88.64	107.10	23.83	152.17	0.38	643.96

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.78	48.10	35.36	22.97	9.26	9.89	13.93	13.93	13.93	20.81	13.34	57.29
Movement LOS	C	F	D	C	A	A	B	B	B	C	B	F
d_A, Approach Delay [s/veh]	45.47			13.25			13.93			42.69		
Approach LOS	D			B			B			D		
d_I, Intersection Delay [s/veh]	32.97											
Intersection LOS	C											
Intersection V/C	0.584											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	8.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.611

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave			Merill Ave			Merill Ave		
Base Volume Input [veh/h]	0	0	0	145	0	75	106	350	0	0	100	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	12	0	38	9	23	30	384	0	0	1134	85
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	12	0	183	9	98	136	734	0	0	1234	181
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	0	48	2	26	36	193	0	0	325	48
Total Analysis Volume [veh/h]	0	13	0	193	9	103	143	773	0	0	1299	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	15	0	0	15	0	0	45	0	0	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	13	13	13	43	43	43	43	43	43
g / C, Green / Cycle	0.22	0.22	0.22	0.22	0.72	0.72	0.72	0.72	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.01	0.08	0.45	0.23	0.23	0.00	0.45	0.46
s, saturation flow rate [veh/h]	1487	1256	1487	1264	317	1676	1676	554	1676	1603
c, Capacity [veh/h]	382	363	322	274	268	1201	1201	460	1201	1149
d1, Uniform Delay [s]	18.57	23.07	18.52	20.04	15.49	3.13	3.13	0.00	4.39	4.44
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	1.21	0.03	0.85	7.41	0.71	0.71	0.00	2.51	2.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.03	0.53	0.03	0.38	0.53	0.32	0.32	0.00	0.63	0.64
d, Delay for Lane Group [s/veh]	18.61	24.29	18.56	20.90	22.90	3.84	3.84	0.00	6.91	7.15
Lane Group LOS	B	C	B	C	C	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.13	2.43	0.09	1.15	1.99	0.93	0.93	0.00	2.75	2.74
50th-Percentile Queue Length [ft]	3.28	60.69	2.28	28.87	49.85	23.30	23.30	0.00	68.76	68.42
95th-Percentile Queue Length [veh]	0.24	4.37	0.16	2.08	3.59	1.68	1.68	0.00	4.95	4.93
95th-Percentile Queue Length [ft]	5.91	109.24	4.10	51.96	89.74	41.94	41.94	0.00	123.78	123.15

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	18.61	18.61	18.61	24.29	18.56	20.90	22.90	3.84	3.84	0.00	7.01	7.15
Movement LOS	B	B	B	C	B	C	C	A	A	A	A	A
d_A, Approach Delay [s/veh]	18.61			22.97			6.81			7.03		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	8.80											
Intersection LOS	A											
Intersection V/C	0.611											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	12.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.619

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	25	1	15	6	1	0	2	552	8	1	165	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	104	0	350	0	0	0	0	298	49	174	164	4
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	129	1	365	6	1	0	2	850	57	175	329	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	0	96	2	0	0	1	224	15	46	87	2
Total Analysis Volume [veh/h]	136	1	384	6	1	0	2	895	60	184	346	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	31	0	0	31	0	0	29	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	20	20	20	20	20	20	36	36	36	36	36	36
g / C, Green / Cycle	0.34	0.34	0.34	0.34	0.34	0.34	0.60	0.60	0.60	0.60	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.11	0.00	0.27	0.01	0.00	0.00	0.00	0.29	0.29	0.35	0.11	0.11
s, saturation flow rate [veh/h]	1269	1676	1425	895	1676	1676	921	1676	1640	527	1676	1663
c, Capacity [veh/h]	539	567	482	214	567	567	592	997	975	325	997	989
d1, Uniform Delay [s]	15.08	13.14	17.97	24.21	13.13	13.13	7.15	6.91	6.91	17.22	5.51	5.51
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	0.00	3.16	0.05	0.00	0.00	0.01	1.68	1.72	6.99	0.39	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.25	0.00	0.80	0.03	0.00	0.00	0.00	0.48	0.48	0.57	0.18	0.18
d, Delay for Lane Group [s/veh]	15.32	13.14	21.14	24.26	13.14	13.14	7.16	8.60	8.63	24.21	5.90	5.90
Lane Group LOS	B	B	C	C	B	B	A	A	A	C	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.23	0.01	4.47	0.07	0.00	0.00	0.01	2.77	2.72	2.56	0.78	0.78
50th-Percentile Queue Length [ft]	30.79	0.20	111.87	1.83	0.10	0.10	0.28	69.20	67.94	64.05	19.56	19.46
95th-Percentile Queue Length [veh]	2.22	0.01	7.94	0.13	0.01	0.01	0.02	4.98	4.89	4.61	1.41	1.40
95th-Percentile Queue Length [ft]	55.42	0.36	198.60	3.29	0.18	0.18	0.51	124.56	122.29	115.30	35.21	35.04

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	15.32	13.14	21.14	24.26	13.14	13.14	7.16	8.61	8.63	24.21	5.90	5.90
Movement LOS	B	B	C	C	B	B	A	A	A	C	A	A
d_A, Approach Delay [s/veh]	19.60			22.67			8.61			12.16		
Approach LOS	B			C			A			B		
d_I, Intersection Delay [s/veh]	12.44											
Intersection LOS	B											
Intersection V/C	0.619											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	49.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

**Intersection Setup**

Name	Archibald Ave			Archibald			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	150.00	100.00	150.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	75	549	27	48	945	84	207	28	344	36	4	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	152	1473	6	90	1202	277	614	120	358	3	80	108
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	211	1901	27	127	1939	343	821	148	702	39	84	130
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	500	7	33	510	90	216	39	185	10	22	34
Total Analysis Volume [veh/h]	222	2001	28	134	2041	361	864	156	739	41	88	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.6	5.2	3.2	3.6	5.2	3.2	3.2	4.8	3.6	3.2	4.8	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	12	54	10	10	52	35	35	46	12	10	21	10
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	55	63	8	53	88	33	43	6	16	16
g / C, Green / Cycle	0.08	0.46	0.52	0.07	0.44	0.73	0.28	0.36	0.05	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.07	0.44	0.02	0.04	0.45	0.25	0.28	0.05	0.01	0.03	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	3101	3192	1425
c, Capacity [veh/h]	258	2088	721	207	2012	1017	853	1146	156	429	192
d1, Uniform Delay [s]	54.30	31.46	14.93	54.63	33.57	6.58	43.50	25.92	54.82	46.23	49.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.44	0.12	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.14	12.06	0.10	3.39	23.72	0.86	18.20	0.05	0.88	0.23	4.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

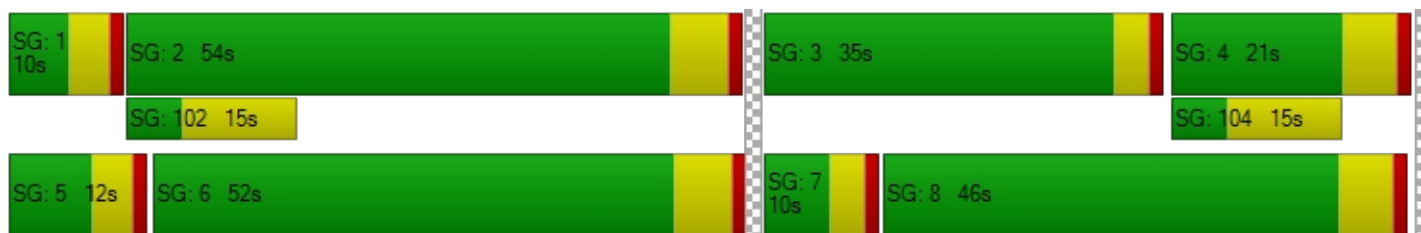
X, volume / capacity	0.86	0.96	0.04	0.65	1.01	0.35	1.01	0.14	0.26	0.21	0.72
d, Delay for Lane Group [s/veh]	62.44	43.52	15.03	58.02	57.28	7.44	61.70	25.98	55.70	46.46	54.64
Lane Group LOS	E	D	B	E	F	A	F	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.55	19.83	0.40	2.04	22.75	3.23	14.40	1.49	0.61	1.17	4.13
50th-Percentile Queue Length [ft]	88.66	495.65	9.88	51.06	568.74	80.77	360.11	37.18	15.19	29.23	103.28
95th-Percentile Queue Length [veh]	6.38	27.13	0.71	3.68	30.91	5.82	20.80	2.68	1.09	2.10	7.44
95th-Percentile Queue Length [ft]	159.58	678.21	17.78	91.90	772.65	145.39	519.88	66.92	27.35	52.62	185.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	62.44	43.52	15.03	58.02	57.28	7.44	61.70	25.98	0.00	55.70	46.46	54.64
Movement LOS	E	D	B	E	F	A	F	C		E	D	D
d_A, Approach Delay [s/veh]	45.03			50.23			56.24			52.10		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	49.39											
Intersection LOS	D											
Intersection V/C	0.893											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	rr		rr		rrrr	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	2	0	1	1
Pocket Length [ft]	100.00	350.00	250.00	100.00	200.00	100.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	399	272	562	757	246	258
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.55	0.55	0.55	0.55	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	896	499	699	820	331	623
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1115	649	1008	1236	577	881
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	293	171	265	325	152	232
Total Analysis Volume [veh/h]	1174	683	1061	1301	607	927
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	7	1	6	7	4
Auxiliary Signal Groups						1
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	5.2	3.6	3.2	4.8	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	22	25	23	45	25	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	20	20	21	43	23	23
g / C, Green / Cycle	0.29	0.29	0.30	0.61	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.23	0.24	0.31	0.26	0.18	0.33
s, saturation flow rate [veh/h]	5074	2803	3445	5074	3445	2803
c, Capacity [veh/h]	1450	801	1034	3117	1132	921
d1, Uniform Delay [s]	23.23	23.61	24.50	7.00	19.15	23.50
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.99	11.16	20.45	0.41	0.40	15.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

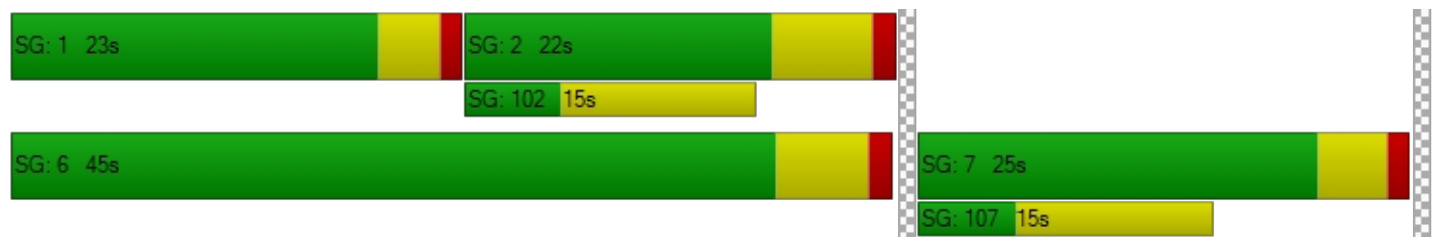
X, volume / capacity	0.81	0.85	1.03	0.42	0.54	1.01
d, Delay for Lane Group [s/veh]	28.23	34.77	44.95	7.42	19.55	38.92
Lane Group LOS	C	C	F	A	B	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	5.81	5.80	10.18	2.28	3.64	8.64
50th-Percentile Queue Length [ft]	145.27	145.00	254.60	57.03	91.06	215.91
95th-Percentile Queue Length [veh]	9.76	9.75	15.66	4.11	6.56	13.51
95th-Percentile Queue Length [ft]	244.10	243.74	391.41	102.66	163.91	337.74

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.23	34.77	44.95	7.42	19.55	38.92
Movement LOS	C	C	F	A	B	F
d_A, Approach Delay [s/veh]	30.63		24.28		31.26	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	28.19					
Intersection LOS	C					
Intersection V/C	0.882					

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	47.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.945

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	200.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	180	464	272	201	472	169	269	643	68	466	568	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.47	0.47	0.47	0.47
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	90	309	3	155	338	193	293	2119	175	9	1281	141
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	270	773	275	356	810	362	419	2421	207	228	1548	205
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	203	72	94	213	95	110	637	54	60	407	54
Total Analysis Volume [veh/h]	284	814	289	375	853	381	441	2548	218	240	1629	216
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	12	21	10	15	24	26	26	54	12	10	38	15
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	10	19	29	13	22	47	23	52	64	8	37	52
g / C, Green / Cycle	0.10	0.19	0.29	0.13	0.22	0.47	0.23	0.52	0.64	0.08	0.37	0.52
(v / s)_i Volume / Saturation Flow Rate	0.09	0.18	0.20	0.12	0.19	0.27	0.14	0.56	0.15	0.08	0.36	0.15
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	310	862	380	403	999	642	725	2380	882	248	1677	706
d1, Uniform Delay [s]	44.58	40.03	33.71	43.05	37.52	20.59	34.21	23.94	8.56	45.87	31.12	15.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.37	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.66	19.71	13.34	9.81	9.21	2.98	0.83	34.09	0.14	19.82	5.51	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

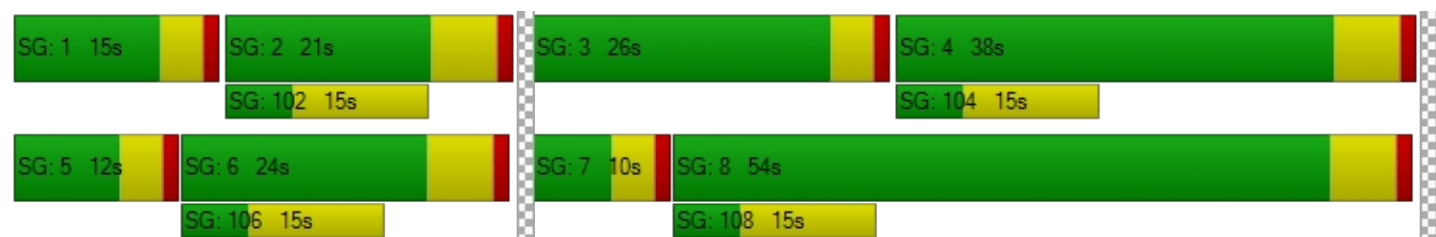
X, volume / capacity	0.92	0.94	0.76	0.93	0.85	0.59	0.61	1.07	0.25	0.97	0.97	0.31
d, Delay for Lane Group [s/veh]	55.24	59.74	47.05	52.86	46.72	23.57	35.04	58.03	8.71	65.69	36.63	15.26
Lane Group LOS	E	E	D	D	D	C	D	F	A	E	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.85	7.91	7.58	4.99	7.27	6.72	4.69	24.02	1.90	3.57	12.89	2.77
50th-Percentile Queue Length [ft]	96.13	197.79	189.55	124.80	181.79	168.05	117.29	600.46	47.48	89.32	322.22	69.29
95th-Percentile Queue Length [veh]	6.92	12.52	12.10	8.66	11.69	10.97	8.24	33.78	3.42	6.43	18.78	4.99
95th-Percentile Queue Length [ft]	173.04	313.11	302.45	216.41	292.35	274.35	206.09	844.49	85.46	160.78	469.42	124.73

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	55.24	59.74	47.05	52.86	46.72	23.57	35.04	58.03	8.71	65.69	36.63	15.26
Movement LOS	E	E	D	D	D	C	D	F	A	E	D	B
d_A, Approach Delay [s/veh]	56.18			42.67			51.51			37.76		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	47.12											
Intersection LOS	D											
Intersection V/C	0.945											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	142.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.514

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	170	0	586	0	1006	373	395	917	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.80	0.80	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	795	0	1413	1038	0	1014	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	170	0	1381	0	1886	1213	316	1748	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	45	0	363	0	496	319	83	460	0
Total Analysis Volume [veh/h]	0	0	0	179	0	1454	0	1985	1277	333	1840	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	34	0	0	56	0	10	66	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		32	32	32	54	54	8	64
g / C, Green / Cycle		0.32	0.32	0.32	0.54	0.54	0.08	0.64
(v / s)_i Volume / Saturation Flow Rate		0.11	0.51	0.51	0.43	0.90	0.11	0.40
s, saturation flow rate [veh/h]		1597	1425	1425	4567	1425	3101	4567
c, Capacity [veh/h]		511	456	456	2466	770	248	2923
d1, Uniform Delay [s]		26.04	34.00	34.00	18.71	23.00	46.00	10.85
k, delay calibration		0.11	0.50	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.41	277.63	277.63	2.92	302.56	160.02	1.04
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

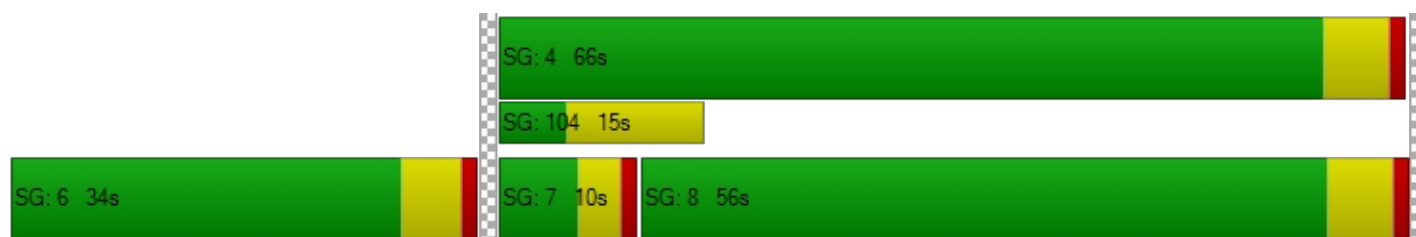
X, volume / capacity		0.35	1.59	1.59	0.80	1.66	1.34	0.63
d, Delay for Lane Group [s/veh]		26.45	311.63	311.63	21.63	325.56	206.02	11.89
Lane Group LOS		C	F	F	C	F	F	B
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		3.19	45.60	45.60	11.71	80.46	8.51	7.13
50th-Percentile Queue Length [ft]		79.83	1139.89	1139.89	292.86	2011.58	212.71	178.13
95th-Percentile Queue Length [veh]		5.75	71.38	71.38	17.33	127.67	14.53	11.50
95th-Percentile Queue Length [ft]		143.70	1784.43	1784.43	433.19	3191.83	363.26	287.57

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	26.45	311.63	311.63	0.00	21.63	325.56	206.02	11.89	0.00
Movement LOS				C	F	F		C	F	F	B	
d_A, Approach Delay [s/veh]	0.00			280.37			140.61			41.64		
Approach LOS	A			F			F			D		
d_I, Intersection Delay [s/veh]	142.47											
Intersection LOS	F											
Intersection V/C	1.514											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	225.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.477

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↑↵						↵↑↑			↑↑↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	356	0	612	0	0	0	390	816	0	0	958	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	1.00	1.00	0.80	0.80
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1194	0	0	0	0	0	1430	744	0	0	859	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1550	0	612	0	0	0	1742	1397	0	0	1625	183
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	408	0	161	0	0	0	458	368	0	0	428	48
Total Analysis Volume [veh/h]	1632	0	644	0	0	0	1834	1471	0	0	1711	193
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	38	0	0	0	0	43	72	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	110	110	110		110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	36	36	36		41	70	27	27
g / C, Green / Cycle	0.33	0.33	0.33		0.37	0.64	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.51	0.51	0.45		0.59	0.32	0.37	0.14
s, saturation flow rate [veh/h]	1597	1597	1425		3101	4567	4567	1425
c, Capacity [veh/h]	523	523	466		1156	2906	1121	350
d1, Uniform Delay [s]	37.00	37.00	37.00		34.50	10.73	41.50	36.22
k, delay calibration	0.50	0.50	0.50		0.34	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	261.97	261.97	184.41		266.95	0.14	237.89	1.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.56	1.56	1.38		1.59	0.51	1.53	0.55
d, Delay for Lane Group [s/veh]	298.97	298.97	221.41		301.45	10.87	279.39	37.58
Lane Group LOS	F	F	F		F	B	F	D
Critical Lane Group	Yes	No	No		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	51.40	51.40	35.83		57.43	5.66	34.45	4.53
50th-Percentile Queue Length [ft]	1284.95	1284.95	895.64		1435.79	141.49	861.37	113.35
95th-Percentile Queue Length [veh]	79.36	79.36	54.57		89.21	9.56	53.62	8.03
95th-Percentile Queue Length [ft]	1984.10	1984.10	1364.21		2230.37	239.03	1340.38	200.65

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	298.97	298.97	221.41	0.00	0.00	0.00	301.45	10.87	0.00	0.00	279.39	37.58
Movement LOS	F	F	F				F	B			F	D
d_A, Approach Delay [s/veh]	277.02			0.00			172.12			254.88		
Approach LOS	F			A			F			F		
d_I, Intersection Delay [s/veh]	225.07											
Intersection LOS	F											
Intersection V/C	1.477											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.853

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	48	710	43	217	708	76	270	782	45	30	221	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	60	64	112	98	9	53	44	0	144	109	297
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	1047	124	414	1082	115	323	826	45	174	330	457
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	276	33	109	285	30	85	217	12	46	87	120
Total Analysis Volume [veh/h]	71	1102	131	436	1139	121	340	869	47	183	347	481
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	23	0	14	27	12	12	23	0	10	21	14
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	21	21	12	27	39	10	21	21	8	19	33
g / C, Green / Cycle	0.09	0.30	0.30	0.17	0.39	0.56	0.14	0.31	0.31	0.11	0.27	0.47
(v / s)_i Volume / Saturation Flow Rate	0.03	0.27	0.10	0.16	0.28	0.10	0.12	0.31	0.04	0.07	0.12	0.38
s, saturation flow rate [veh/h]	2750	4050	1264	2750	4050	1264	2750	2831	1264	2750	2831	1264
c, Capacity [veh/h]	239	1220	381	471	1563	665	393	865	386	296	765	555
d1, Uniform Delay [s]	29.97	23.48	19.07	28.56	18.36	8.70	29.34	24.31	17.54	29.85	21.24	17.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.37
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	11.00	2.46	8.17	3.02	0.13	5.81	15.46	0.14	2.10	0.42	12.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	0.90	0.34	0.92	0.73	0.18	0.87	1.01	0.12	0.62	0.45	0.87
d, Delay for Lane Group [s/veh]	30.65	34.48	21.53	36.73	21.38	8.83	35.15	39.77	17.68	31.95	21.67	30.66
Lane Group LOS	C	C	C	D	C	A	D	F	B	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.55	6.42	1.76	3.96	5.22	0.87	2.90	8.18	0.51	1.46	2.19	7.86
50th-Percentile Queue Length [ft]	13.72	160.47	43.98	99.04	130.39	21.76	72.56	204.44	12.77	36.50	54.73	196.44
95th-Percentile Queue Length [veh]	0.99	10.57	3.17	7.13	8.96	1.57	5.22	12.91	0.92	2.63	3.94	12.45
95th-Percentile Queue Length [ft]	24.70	264.35	79.17	178.28	224.02	39.17	130.61	322.63	22.99	65.71	98.51	311.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.65	34.48	21.53	36.73	21.38	8.83	35.15	39.77	17.68	31.95	21.67	30.66
Movement LOS	C	C	C	D	C	A	D	F	B	C	C	C
d_A, Approach Delay [s/veh]	32.97			24.43			37.69			27.81		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	30.35											
Intersection LOS	C											
Intersection V/C	0.853											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type:	Signalized	Delay (sec / veh):	22.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.782

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	2	2	0	1	2	0	0	2	0	1
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	10	574	914	66	624	6	7	387	46	472	91	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	134	55	0	175	0	0	0	0	155	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	932	1325	92	1042	8	7	387	46	627	91	26
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	245	349	24	274	2	2	102	12	165	24	7
Total Analysis Volume [veh/h]	15	981	1395	97	1097	8	7	407	48	660	96	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	27	22	10	21	0	10	21	0	22	33	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	30	52	7	33	33	3	15	20	32
g / C, Green / Cycle	0.05	0.38	0.66	0.08	0.42	0.42	0.04	0.19	0.25	0.40
(v / s)_i Volume / Saturation Flow Rate	0.01	0.16	0.56	0.03	0.18	0.01	0.00	0.13	0.22	0.02
s, saturation flow rate [veh/h]	1573	6001	2486	3056	6001	1404	3056	3146	3056	4501
c, Capacity [veh/h]	74	2282	1561	254	2497	584	115	587	764	1796
d1, Uniform Delay [s]	36.66	18.36	12.63	34.74	16.69	13.71	37.14	30.40	28.70	14.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.32	0.59	8.28	0.95	0.56	0.04	0.22	1.48	3.08	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

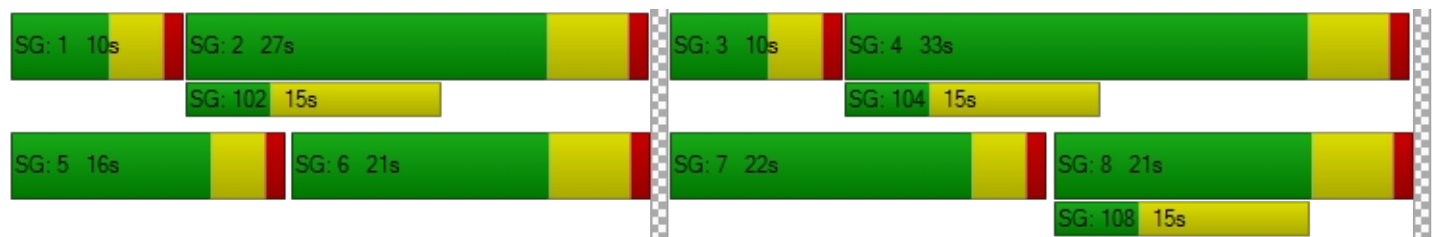
X, volume / capacity	0.20	0.43	0.89	0.38	0.44	0.01	0.06	0.69	0.86	0.05
d, Delay for Lane Group [s/veh]	37.98	18.95	20.91	35.68	17.25	13.76	37.36	31.88	31.78	14.77
Lane Group LOS	D	B	C	D	B	B	D	C	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.30	3.15	9.62	0.89	3.32	0.08	0.07	3.57	5.94	0.33
50th-Percentile Queue Length [ft]	7.44	78.76	240.60	22.17	83.08	2.11	1.67	89.16	148.42	8.23
95th-Percentile Queue Length [veh]	0.54	5.67	14.71	1.60	5.98	0.15	0.12	6.42	9.93	0.59
95th-Percentile Queue Length [ft]	13.39	141.77	367.79	39.91	149.54	3.79	3.01	160.49	248.32	14.82

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.98	18.95	20.91	35.68	17.25	13.76	37.36	31.88	0.00	31.78	14.77	0.00
Movement LOS	D	B	C	D	B	B	D	C		C	B	
d_A, Approach Delay [s/veh]	20.21			18.71			31.97			29.62		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	22.35											
Intersection LOS	C											
Intersection V/C	0.782											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	23.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	204	456	123	160	576	280	389	948	177	93	318	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.55	0.55	0.55	0.55	0.55	0.55	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	1097	0	34	978	46	52	0	0	0	0	42
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	1348	68	122	1295	200	441	948	177	93	318	76
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	355	18	32	341	53	116	249	47	24	84	20
Total Analysis Volume [veh/h]	118	1419	72	128	1363	211	464	998	186	98	335	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	3.6	3.6	5.2	3.6	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	10	11	23	15	15	27	0	10	22	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	27	35	7	27	42	13	21	21	7	15	15
g / C, Green / Cycle	0.10	0.38	0.51	0.10	0.38	0.60	0.19	0.31	0.31	0.10	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.04	0.31	0.05	0.04	0.30	0.15	0.15	0.22	0.13	0.03	0.07	0.06
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	316	1729	668	321	1737	794	576	1394	435	305	995	311
d1, Uniform Delay [s]	29.36	19.61	10.41	29.34	19.16	8.05	27.29	21.62	19.43	29.38	23.10	22.68
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.73	4.51	0.33	0.80	3.64	0.18	2.72	0.70	0.67	0.60	0.20	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.37	0.82	0.11	0.40	0.78	0.27	0.81	0.72	0.43	0.32	0.34	0.26
d, Delay for Lane Group [s/veh]	30.09	24.12	10.74	30.15	22.80	8.22	30.01	22.32	20.10	29.98	23.30	23.11
Lane Group LOS	C	C	B	C	C	A	C	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.90	6.71	0.59	0.98	6.22	1.34	3.63	4.42	2.26	0.74	1.45	1.04
50th-Percentile Queue Length [ft]	22.47	167.82	14.75	24.43	155.51	33.52	90.66	110.55	56.43	18.60	36.24	26.10
95th-Percentile Queue Length [veh]	1.62	10.96	1.06	1.76	10.31	2.41	6.53	7.87	4.06	1.34	2.61	1.88
95th-Percentile Queue Length [ft]	40.45	274.04	26.56	43.97	257.77	60.34	163.19	196.76	101.57	33.47	65.23	46.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.09	24.12	10.74	30.15	22.80	8.22	30.01	22.32	20.10	29.98	23.30	23.11
Movement LOS	C	C	B	C	C	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	23.96			21.55			24.24			24.55		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.35											
Intersection LOS	C											
Intersection V/C	0.602											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 46: Hellman Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	0.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.318

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	↵↵		↑↑		↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	409	0	0	427
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	409	0	0	427
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	818	0	0	854
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	215	0	0	225
Total Analysis Volume [veh/h]	0	0	861	0	0	899
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.8	0.0	4.8	0.0	0.0	4.8
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	11	0	109	0	0	109
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	4	112	112	112	112
g / C, Green / Cycle	0.03	0.03	0.93	0.93	0.93	0.93
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.29	0.29	0.00	0.32
s, saturation flow rate [veh/h]	1416	1264	1487	1487	510	2831
c, Capacity [veh/h]	47	42	1388	1388	515	2643
d1, Uniform Delay [s]	0.00	0.00	0.37	0.37	0.00	0.39
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.58	0.58	0.00	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.00	0.00	0.31	0.31	0.00	0.34
d, Delay for Lane Group [s/veh]	0.00	0.00	0.95	0.95	0.00	0.74
Lane Group LOS	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.00	0.00	0.22	0.22	0.00	0.13
50th-Percentile Queue Length [ft]	0.00	0.00	5.61	5.61	0.00	3.22
95th-Percentile Queue Length [veh]	0.00	0.00	0.40	0.40	0.00	0.23
95th-Percentile Queue Length [ft]	0.00	0.00	10.09	10.09	0.00	5.79

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.95	0.95	0.00	0.74
Movement LOS	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00		0.95		0.74	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.84					
Intersection LOS	A					
Intersection V/C	0.318					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 47: Hellman Ave/Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	1.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.454

**Intersection Setup**

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	573	170	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	648	342	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1221	512	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	321	135	0
Total Analysis Volume [veh/h]	0	0	0	1285	539	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.8	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	11	0	0	109	109	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	1.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	4	112	112	112	112
g / C, Green / Cycle	0.03	0.03	0.93	0.93	0.93	0.93
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.45	0.18	0.18
s, saturation flow rate [veh/h]	1416	1264	689	2831	1487	1487
c, Capacity [veh/h]	47	42	684	2643	1388	1388
d1, Uniform Delay [s]	0.00	0.00	0.00	0.48	0.32	0.32
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.64	0.31	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.00	0.00	0.00	0.49	0.19	0.19
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	1.13	0.63	0.63
Lane Group LOS	A	A	A	A	A	A
Critical Lane Group	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.24	0.12	0.12
50th-Percentile Queue Length [ft]	0.00	0.00	0.00	5.90	3.01	3.01
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.42	0.22	0.22
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	10.61	5.42	5.42

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	1.13	0.63	0.63
Movement LOS	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00		1.13		0.63	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.98					
Intersection LOS	A					
Intersection V/C	0.454					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 66: Archibald Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	52.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.886

**Intersection Setup**

Name	Archibald						Eucalyptus					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald						Eucalyptus					
Base Volume Input [veh/h]	0	868	30	47	1093	0	0	0	0	2	0	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	347	1694	42	107	1344	20	29	52	328	27	60	104
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	347	2371	65	144	2197	20	29	52	328	29	60	126
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	624	17	38	578	5	8	14	86	8	16	33
Total Analysis Volume [veh/h]	365	2496	68	152	2313	21	31	55	345	31	63	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	15	55	0	10	50	0	10	25	15	10	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	53	53	8	48	48	5	26	26	5	26	26
g / C, Green / Cycle	0.13	0.53	0.53	0.08	0.48	0.48	0.05	0.26	0.26	0.05	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.12	0.53	0.53	0.05	0.51	0.01	0.02	0.03	0.24	0.02	0.04	0.09
s, saturation flow rate [veh/h]	3101	3192	1654	3101	4567	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	403	1697	879	248	2199	686	82	431	367	82	431	367
d1, Uniform Delay [s]	42.89	23.18	23.42	44.50	25.92	13.64	45.91	28.51	36.39	45.91	28.66	30.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.31	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.81	19.76	31.37	2.45	34.49	0.08	2.89	0.13	24.94	2.89	0.15	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

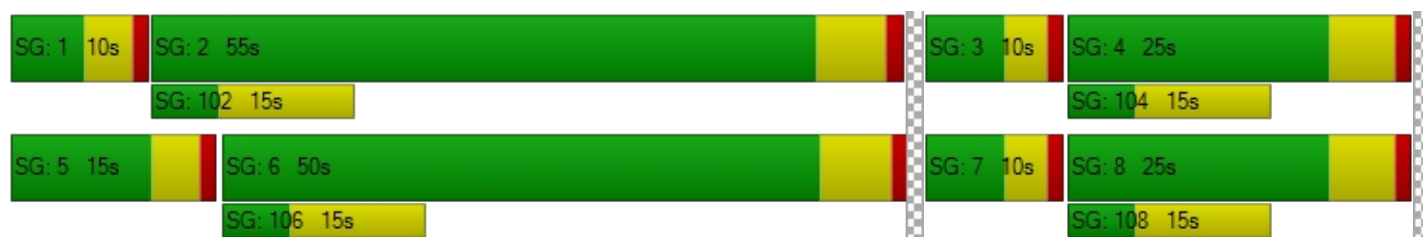
X, volume / capacity	0.91	0.99	1.00	0.61	1.05	0.03	0.38	0.13	0.94	0.38	0.15	0.36
d, Delay for Lane Group [s/veh]	50.71	42.93	54.79	46.95	60.41	13.72	48.80	28.65	61.33	48.80	28.81	31.02
Lane Group LOS	D	D	F	D	F	B	D	C	E	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	4.75	21.87	25.86	1.86	22.70	0.25	0.79	1.00	10.40	0.79	1.15	2.59
50th-Percentile Queue Length [ft]	118.64	546.69	646.38	46.50	567.38	6.30	19.84	24.95	260.04	19.84	28.72	64.87
95th-Percentile Queue Length [veh]	8.32	29.54	34.31	3.35	31.69	0.45	1.43	1.80	15.69	1.43	2.07	4.67
95th-Percentile Queue Length [ft]	207.96	738.42	857.81	83.70	792.27	11.34	35.70	44.90	392.27	35.70	51.70	116.76

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	50.71	46.80	54.79	46.95	60.41	13.72	48.80	28.65	61.33	48.80	28.81	31.02
Movement LOS	D	D	D	D	F	B	D	C	E	D	C	C
d_A, Approach Delay [s/veh]	47.48			59.20			56.26			32.84		
Approach LOS	D			E			E			C		
d_I, Intersection Delay [s/veh]	52.35											
Intersection LOS	D											
Intersection V/C	0.886											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**HORIZON YEAR 2040 PLUS PROJECT AM/PM PEAK HOUR**

**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	138	883	163	56	862	98	109	313	128	179	437	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.20	1.20	1.20	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	22	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	3	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	29	0	0	62	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	1097	196	67	1121	118	109	313	128	179	437	92
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	289	52	18	295	31	29	82	34	47	115	24
Total Analysis Volume [veh/h]	175	1155	206	71	1180	124	115	329	135	188	460	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	34	0	60	23	0	10	23	0	13	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	9	40	40	0	29	29	26	15	15	10	18	18
g / C, Green / Cycle	0.13	0.57	0.57	0.00	0.41	0.41	0.37	0.21	0.21	0.15	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.11	0.29	0.29	0.54	0.27	0.27	0.11	0.14	0.15	0.13	0.16	0.16
s, saturation flow rate [veh/h]	1597	3192	1550	132	3192	1662	1003	1676	1514	1398	1744	1640
c, Capacity [veh/h]	205	1818	883	103	1317	686	392	359	324	299	439	413
d1, Uniform Delay [s]	29.85	9.09	9.09	35.00	16.52	16.52	18.02	25.28	25.35	18.14	23.46	23.47
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.57	1.00	2.05	31.76	2.51	4.76	0.41	2.22	2.57	2.18	1.65	1.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

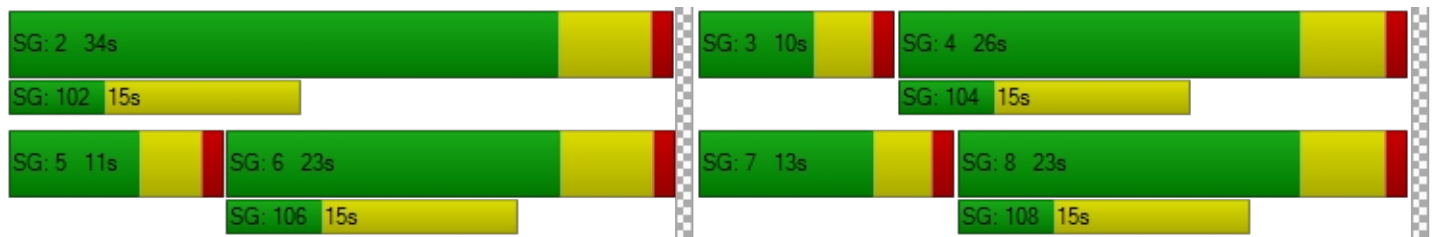
X, volume / capacity	0.85	0.50	0.50	0.69	0.65	0.65	0.29	0.67	0.69	0.63	0.65	0.66
d, Delay for Lane Group [s/veh]	39.42	10.09	11.15	66.76	19.03	21.28	18.43	27.49	27.92	20.32	25.11	25.25
Lane Group LOS	D	B	B	E	B	C	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	3.22	3.48	3.64	2.29	5.19	5.84	1.26	3.60	3.34	2.27	4.05	3.83
50th-Percentile Queue Length [ft]	80.50	86.99	90.94	57.20	129.87	145.98	31.49	90.07	83.58	56.74	101.20	95.87
95th-Percentile Queue Length [veh]	5.80	6.26	6.55	4.12	8.93	9.80	2.27	6.48	6.02	4.09	7.29	6.90
95th-Percentile Queue Length [ft]	144.90	156.58	163.70	102.96	223.32	245.06	56.67	162.12	150.45	102.13	182.16	172.57

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.42	10.31	11.15	66.76	19.65	21.28	18.43	27.61	27.92	20.32	25.16	25.25
Movement LOS	D	B	B	E	B	C	B	C	C	C	C	C
d_A, Approach Delay [s/veh]	13.74			22.23			25.86			23.95		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	19.95											
Intersection LOS	B											
Intersection V/C	0.617											

**Sequence**

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	188	915	188	77	671	80	136	209	247	76	144	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.28	1.28	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	54	0	0	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	78	0	0	58	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	241	1259	241	99	971	102	136	209	248	76	144	80
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	331	63	26	256	27	36	55	65	20	38	21
Total Analysis Volume [veh/h]	254	1325	254	104	1022	107	143	220	261	80	152	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	29	0	11	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	9	33	33	7	30	30	25	17	17	25	16	16
g / C, Green / Cycle	0.13	0.47	0.47	0.09	0.43	0.43	0.35	0.24	0.24	0.35	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.08	0.33	0.33	0.03	0.24	0.24	0.12	0.13	0.18	0.08	0.07	0.08
s, saturation flow rate [veh/h]	3101	3192	1543	3101	3192	1596	1212	1676	1482	1040	1676	1547
c, Capacity [veh/h]	403	1500	725	291	1385	692	488	397	351	358	372	343
d1, Uniform Delay [s]	28.85	14.75	14.79	29.73	14.68	14.69	18.88	23.47	24.75	18.97	22.82	22.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.63	2.86	5.88	0.74	1.54	3.06	0.33	1.21	3.13	0.31	0.49	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

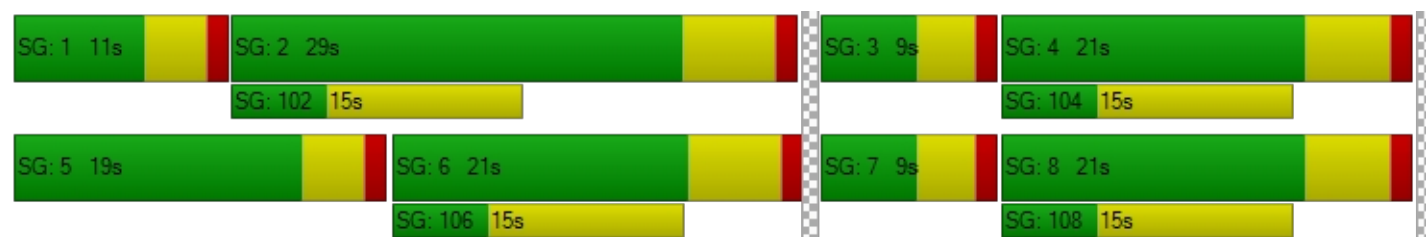
X, volume / capacity	0.63	0.71	0.71	0.36	0.54	0.54	0.29	0.55	0.74	0.22	0.32	0.34
d, Delay for Lane Group [s/veh]	30.48	17.61	20.67	30.47	16.22	17.74	19.22	24.68	27.88	19.28	23.31	23.49
Lane Group LOS	C	B	C	C	B	B	B	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.94	5.96	6.41	0.79	3.95	4.25	1.65	3.05	3.95	0.89	1.57	1.54
50th-Percentile Queue Length [ft]	48.49	149.01	160.28	19.66	98.82	106.29	41.32	76.16	98.74	22.33	39.27	38.48
95th-Percentile Queue Length [veh]	3.49	9.96	10.56	1.42	7.11	7.63	2.98	5.48	7.11	1.61	2.83	2.77
95th-Percentile Queue Length [ft]	87.28	249.11	264.09	35.38	177.87	190.83	74.38	137.09	177.73	40.20	70.68	69.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.48	18.21	20.67	30.47	16.62	17.74	19.22	24.68	27.88	19.28	23.35	23.49
Movement LOS	C	B	C	C	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	20.25			17.89			24.76			22.36		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	20.39											
Intersection LOS	C											
Intersection V/C	0.584											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.353

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Lane Configuration	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Turning Movement												
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	372	670	219	34	212	27	23	117	84	71	254	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	7	2	0	39	0	0	0	6	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	2	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	7	440	0	0	231	14	0	0	10	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	361	1086	210	32	473	40	23	117	100	81	254	40
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	286	55	8	124	11	6	31	26	21	67	11
Total Analysis Volume [veh/h]	380	1143	221	34	498	42	24	123	105	85	267	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	24	10	10	21	15	15	26	13	10	21	10
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	11	42	51	5	36	42	4	9	22	6	11	18
g / C, Green / Cycle	0.16	0.60	0.72	0.07	0.51	0.60	0.06	0.13	0.31	0.09	0.16	0.25
(v / s)_i Volume / Saturation Flow Rate	0.12	0.25	0.16	0.01	0.11	0.03	0.01	0.04	0.07	0.03	0.08	0.03
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	487	2754	985	205	2338	809	182	401	399	282	504	315
d1, Uniform Delay [s]	28.34	7.36	3.96	30.86	9.35	6.74	31.26	27.83	19.59	29.75	27.08	21.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.75	0.46	0.53	0.38	0.21	0.03	0.33	0.43	0.35	0.60	0.86	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

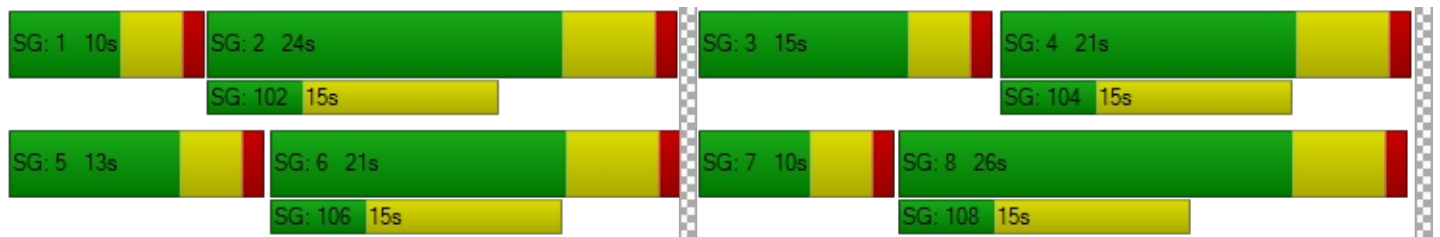
X, volume / capacity	0.78	0.42	0.22	0.17	0.21	0.05	0.13	0.31	0.26	0.30	0.53	0.13
d, Delay for Lane Group [s/veh]	31.09	7.82	4.48	31.24	9.56	6.76	31.59	28.25	19.93	30.34	27.94	22.06
Lane Group LOS	C	A	A	C	A	A	C	C	B	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.01	2.33	0.84	0.27	1.19	0.22	0.19	0.90	1.25	0.65	1.96	0.53
50th-Percentile Queue Length [ft]	75.31	58.36	21.01	6.64	29.69	5.62	4.73	22.46	31.20	16.26	49.04	13.20
95th-Percentile Queue Length [veh]	5.42	4.20	1.51	0.48	2.14	0.40	0.34	1.62	2.25	1.17	3.53	0.95
95th-Percentile Queue Length [ft]	135.55	105.05	37.82	11.95	53.44	10.11	8.52	40.42	56.16	29.27	88.27	23.76

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.09	7.82	4.48	31.24	9.56	6.76	31.59	28.25	19.93	30.34	27.94	22.06
Movement LOS	C	A	A	C	A	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	12.47			10.64			25.10			27.83		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.23											
Intersection LOS	B											
Intersection V/C	0.353											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	279	831	0	0	803	454	0	0	0	450	0	398
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.20	1.20	1.00	1.00	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	4	0	0	22	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	17	4	0	0	3	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	85	31	0	0	74	0	0	0	0	270	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	444	1036	0	0	1063	545	0	0	0	720	0	398
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	273	0	0	280	143	0	0	0	189	0	105
Total Analysis Volume [veh/h]	467	1091	0	0	1119	574	0	0	0	758	0	419
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	12	41	0	0	29	0	0	0	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	10	39	27	27		17	17	17
g / C, Green / Cycle	0.17	0.65	0.45	0.45		0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.15	0.24	0.35	0.40		0.25	0.25	0.28
s, saturation flow rate [veh/h]	3101	4567	3192	1425		1597	1584	1425
c, Capacity [veh/h]	517	2968	1436	641		452	449	404
d1, Uniform Delay [s]	24.53	4.83	13.97	15.20		20.43	20.48	21.26
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	6.18	0.35	4.24	17.48		5.17	5.50	16.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

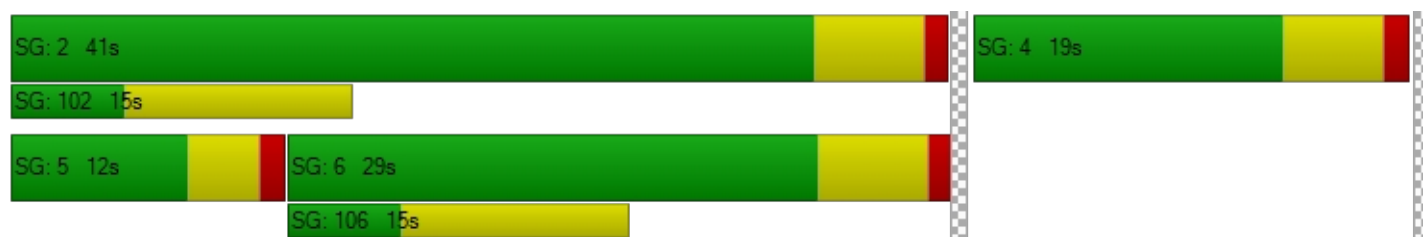
X, volume / capacity	0.90	0.37	0.78	0.90		0.87	0.87	0.97
d, Delay for Lane Group [s/veh]	30.71	5.18	18.21	32.68		25.60	25.98	37.51
Lane Group LOS	C	A	B	C		C	C	D
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	3.34	1.29	5.87	8.72		5.13	5.17	6.48
50th-Percentile Queue Length [ft]	83.60	32.23	146.68	217.92		128.16	129.35	162.05
95th-Percentile Queue Length [veh]	6.02	2.32	9.84	13.56		8.84	8.90	10.66
95th-Percentile Queue Length [ft]	150.48	58.01	245.99	338.96		220.99	222.61	266.43

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.71	5.18	0.00	0.00	18.21	32.68	0.00	0.00	0.00	25.78	25.98	36.78
Movement LOS	C	A			B	C				C	C	D
d_A, Approach Delay [s/veh]	12.83			23.12			0.00			29.70		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	21.25											
Intersection LOS	C											
Intersection V/C	0.829											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	44.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.020

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T			TT			T+					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	715	478	273	957	0	390	2	278	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.20	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	22	0	0	0	22	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	3	0	0	0	13	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	117	48	0	343	0	0	0	317	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1007	622	328	1516	0	390	2	630	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	265	164	86	399	0	103	1	166	0	0	0
Total Analysis Volume [veh/h]	0	1060	655	345	1596	0	411	2	663	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	29	0	10	39	0	0	31	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	27	27	8	37	29	29	
g / C, Green / Cycle	0.39	0.39	0.11	0.53	0.41	0.41	
(v / s)_i Volume / Saturation Flow Rate	0.33	0.44	0.11	0.35	0.26	0.47	
s, saturation flow rate [veh/h]	3192	1482	3101	4567	1597	1426	
c, Capacity [veh/h]	1231	572	354	2414	661	591	
d1, Uniform Delay [s]	19.77	21.50	30.89	11.96	16.17	20.50	
k, delay calibration	0.50	0.50	0.11	0.50	0.16	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	8.02	84.78	16.77	1.44	1.40	76.78	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.86	1.15	0.97	0.66	0.62	1.13	
d, Delay for Lane Group [s/veh]	27.80	106.28	47.67	13.40	17.56	97.28	
Lane Group LOS	C	F	D	B	B	F	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	8.20	21.47	3.52	5.09	4.71	20.72	
50th-Percentile Queue Length [ft]	205.04	536.78	88.01	127.23	117.81	517.88	
95th-Percentile Queue Length [veh]	12.90	31.75	6.34	8.79	8.27	30.51	
95th-Percentile Queue Length [ft]	322.45	793.77	158.42	219.72	206.81	762.73	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	27.80	106.28	47.67	13.40	0.00	17.56	97.28	97.28	0.00	0.00	0.00
Movement LOS		C	F	D	B		B	F	F			
d_A, Approach Delay [s/veh]	57.77			19.49			66.83			0.00		
Approach LOS	E			B			E			A		
d_I, Intersection Delay [s/veh]	44.13											
Intersection LOS	D											
Intersection V/C	1.020											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	35.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.966

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	199	981	0	0	604	445	0	0	0	182	1	430
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.00	1.00	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	10	0	0	55	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	66	78	0	0	58	0	0	0	0	20	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	345	1344	0	0	886	570	0	0	0	202	1	430
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	354	0	0	233	150	0	0	0	53	0	113
Total Analysis Volume [veh/h]	363	1415	0	0	933	600	0	0	0	213	1	453
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	15	40	0	0	25	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	13	38	23	23		18	18
g / C, Green / Cycle	0.22	0.63	0.38	0.38		0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.23	0.44	0.29	0.42		0.13	0.32
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	346	2022	1224	546		479	428
d1, Uniform Delay [s]	23.50	7.25	16.12	18.50		16.97	21.00
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	36.67	2.05	4.53	68.17		0.65	43.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

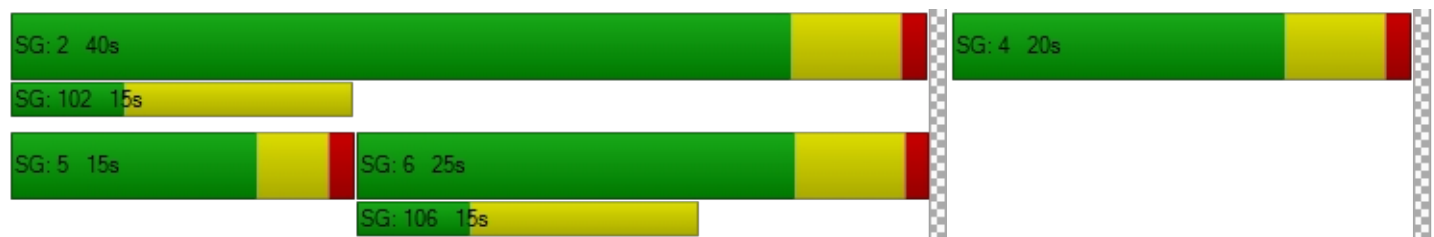
X, volume / capacity	1.05	0.70	0.76	1.10		0.45	1.06
d, Delay for Lane Group [s/veh]	60.17	9.29	20.65	86.67		17.63	64.69
Lane Group LOS	F	A	C	F		B	F
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	7.71	3.81	5.19	16.29		2.15	10.27
50th-Percentile Queue Length [ft]	192.87	95.25	129.87	407.26		53.63	256.87
95th-Percentile Queue Length [veh]	12.57	6.86	8.93	24.34		3.86	16.06
95th-Percentile Queue Length [ft]	314.15	171.46	223.32	608.56		96.53	401.42

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	60.17	9.29	0.00	0.00	20.65	86.67	0.00	0.00	0.00	17.63	17.63	64.69
Movement LOS	F	A			C	F				B	B	F
d_A, Approach Delay [s/veh]	19.68		46.49		0.00		49.59					
Approach LOS	B		D		A		D					
d_I, Intersection Delay [s/veh]	35.03											
Intersection LOS	D											
Intersection V/C	0.966											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	63.1
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.024

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑			↵ ↑			↑ ↑					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	578	242	251	543	0	597	0	148	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.28	1.28	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	34	0	0	55	0	0	0	143	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	144	37	0	78	0	0	0	36	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	918	347	321	828	0	597	0	327	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	242	91	84	218	0	157	0	86	0	0	0
Total Analysis Volume [veh/h]	0	966	365	338	872	0	628	0	344	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	28	0	15	43	0	0	27	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	26	26	13	41	25	25	
g / C, Green / Cycle	0.37	0.37	0.19	0.59	0.36	0.36	
(v / s)_i Volume / Saturation Flow Rate	0.40	0.42	0.21	0.27	0.39	0.24	
s, saturation flow rate [veh/h]	1676	1590	1597	3192	1597	1425	
c, Capacity [veh/h]	623	590	297	1870	570	509	
d1, Uniform Delay [s]	22.00	22.00	28.50	8.26	22.50	19.07	
k, delay calibration	0.50	0.50	0.11	0.50	0.39	0.13	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	55.84	77.22	72.26	0.84	64.53	1.89	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	1.07	1.13	1.14	0.47	1.10	0.68	
d, Delay for Lane Group [s/veh]	77.84	99.22	100.76	9.10	87.03	20.96	
Lane Group LOS	F	F	F	A	F	C	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	18.46	21.01	10.42	2.91	18.35	4.42	
50th-Percentile Queue Length [ft]	461.48	525.28	260.49	72.79	458.71	110.56	
95th-Percentile Queue Length [veh]	26.66	30.83	16.70	5.24	26.99	7.87	
95th-Percentile Queue Length [ft]	666.53	770.67	417.47	131.02	674.80	196.79	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	84.49	99.22	100.76	9.10	0.00	87.03	87.03	20.96	0.00	0.00	0.00
Movement LOS		F	F	F	A		F	F	C			
d_A, Approach Delay [s/veh]	88.53			34.71			63.65			0.00		
Approach LOS	F			C			E			A		
d_I, Intersection Delay [s/veh]	63.11											
Intersection LOS	E											
Intersection V/C	1.024											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	1	0	0	0	0	0	0	0	1
Pocket Length [ft]	530.00	100.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	476	1012	0	0	279	104	0	0	0	253	2	383
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	55	0	0	0	0	123	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	2	0	0	0	0	11	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	233	447	0	0	241	14	0	0	0	162	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	685	1420	0	0	563	113	0	0	0	549	2	383
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	180	374	0	0	148	30	0	0	0	144	1	101
Total Analysis Volume [veh/h]	721	1495	0	0	593	119	0	0	0	578	2	403
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	5	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	17	34	0	0	17	0	0	0	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	Yes	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	60	60	60	60		60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	15	32	15	15		24	24
g / C, Green / Cycle	0.25	0.53	0.25	0.25		0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.23	0.33	0.15	0.15		0.36	0.28
s, saturation flow rate [veh/h]	3101	4567	3192	1540		1597	1425
c, Capacity [veh/h]	775	2436	798	385		639	570
d1, Uniform Delay [s]	21.99	9.71	19.82	19.95		16.96	15.06
k, delay calibration	0.11	0.50	0.50	0.50		0.25	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	5.66	1.17	3.25	7.21		10.99	1.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.93	0.61	0.59	0.62		0.91	0.71
d, Delay for Lane Group [s/veh]	27.65	10.88	23.08	27.16		27.95	17.04
Lane Group LOS	C	B	C	C		C	B
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh]	4.91	3.55	2.91	3.34		8.02	4.06
50th-Percentile Queue Length [ft]	122.83	88.82	72.87	83.54		200.44	101.42
95th-Percentile Queue Length [veh]	8.55	6.39	5.25	6.02		12.66	7.30
95th-Percentile Queue Length [ft]	213.70	159.87	131.17	150.38		316.53	182.56

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.65	10.88	0.00	0.00	23.89	27.16	0.00	0.00	0.00	27.95	27.95	17.04
Movement LOS	C	B			C	C				C	C	B
d_A, Approach Delay [s/veh]	16.34			24.44			0.00			23.47		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	19.60											
Intersection LOS	B											
Intersection V/C	0.750											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
Base Volume Input [veh/h]	0	1157	337	76	451	0	319	1	295	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	28	0	178	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	14	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	672	181	0	496	0	0	4	234	0	6	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1783	543	72	1115	0	319	5	529	0	6	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	469	143	19	293	0	84	1	139	0	2	0
Total Analysis Volume [veh/h]	0	1877	572	76	1174	0	336	5	557	0	6	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	27	0	15	42	0	0	18	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	L	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	32	6	40	16	16	16	
g / C, Green / Cycle	0.54	0.10	0.67	0.27	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.41	0.02	0.26	0.19	0.21	0.21	
s, saturation flow rate [veh/h]	4567	3101	4567	1597	1444	1425	
c, Capacity [veh/h]	2447	305	3048	424	384	379	
d1, Uniform Delay [s]	10.98	25.00	4.46	20.00	20.35	20.40	
k, delay calibration	0.50	0.11	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.37	0.42	0.37	2.32	3.33	3.51	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

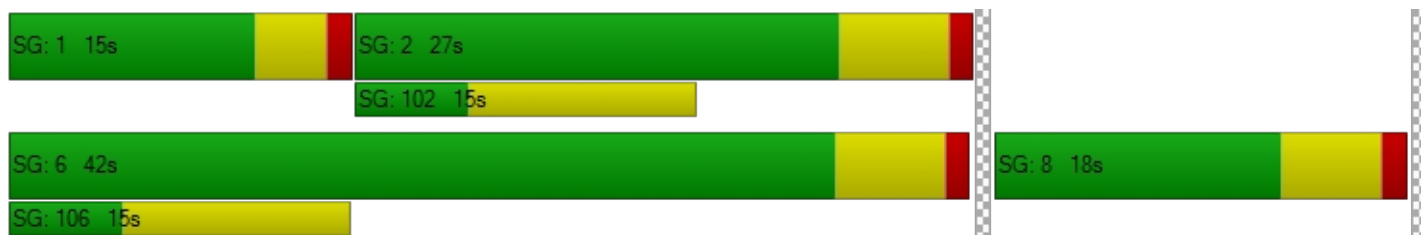
X, volume / capacity	0.77	0.25	0.39	0.72	0.77	0.78	
d, Delay for Lane Group [s/veh]	13.35	25.42	4.83	22.32	23.68	23.91	
Lane Group LOS	B	C	A	C	C	C	
Critical Lane Group	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh]	5.19	0.47	1.27	3.64	3.68	3.69	
50th-Percentile Queue Length [ft]	129.85	11.85	31.63	91.02	91.95	92.14	
95th-Percentile Queue Length [veh]	8.93	0.85	2.28	6.55	6.62	6.63	
95th-Percentile Queue Length [ft]	223.29	21.32	56.94	163.83	165.51	165.85	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	13.35	0.00	25.42	4.83	0.00	22.47	23.68	23.80	0.00	0.00	0.00
Movement LOS		B		C	A		C	C	C			
d_A, Approach Delay [s/veh]	13.35			6.09			23.29			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	13.31											
Intersection LOS	B											
Intersection V/C	0.643											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	121	840	54	152	899	47	126	265	93	61	278	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.20	1.20	1.20	1.20	1.20	1.20	1.19	1.19	1.19	1.19	1.19	1.19
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	1	42	0	0	0	3	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	178	0	0	661	0	0	0	84	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	1217	65	183	1798	56	150	315	198	73	331	218
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	320	17	48	473	15	39	83	52	19	87	57
Total Analysis Volume [veh/h]	153	1281	68	193	1893	59	158	332	208	77	348	229
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	28	28	7	28	28	19	19	19	19	19	19
g / C, Green / Cycle	0.11	0.46	0.46	0.12	0.47	0.47	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.32	0.05	0.07	0.47	0.05	0.24	0.19	0.19	0.11	0.21	0.21
s, saturation flow rate [veh/h]	2750	4050	1264	2750	4050	1264	665	1487	1299	688	1487	1294
c, Capacity [veh/h]	316	1878	586	329	1898	592	201	471	411	214	471	410
d1, Uniform Delay [s]	24.90	12.62	9.12	25.01	15.90	8.89	28.13	17.36	17.40	25.18	17.65	17.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.15	2.03	0.40	1.67	20.04	0.34	6.67	1.28	1.50	1.02	1.53	1.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	0.68	0.12	0.59	1.00	0.10	0.79	0.61	0.62	0.36	0.65	0.66
d, Delay for Lane Group [s/veh]	26.05	14.64	9.52	26.68	35.95	9.22	34.80	18.64	18.90	26.19	19.17	19.53
Lane Group LOS	C	B	A	C	D	A	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	0.98	3.84	0.47	1.25	10.05	0.40	2.48	3.03	2.70	1.02	3.31	2.96
50th-Percentile Queue Length [ft]	24.41	96.02	11.67	31.35	251.20	9.90	61.95	75.73	67.57	25.47	82.71	74.02
95th-Percentile Queue Length [veh]	1.76	6.91	0.84	2.26	15.25	0.71	4.46	5.45	4.86	1.83	5.96	5.33
95th-Percentile Queue Length [ft]	43.93	172.83	21.01	56.43	381.16	17.83	111.51	136.31	121.62	45.84	148.88	133.23

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.05	14.64	9.52	26.68	35.95	9.22	34.80	18.67	18.90	26.19	19.22	19.53
Movement LOS	C	B	A	C	D	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	15.57			34.38			22.39			20.15		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	25.19											
Intersection LOS	C											
Intersection V/C	0.761											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	23.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↱			↵↱			↵↱			↵↱		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	51	423	11	94	380	92	153	207	44	9	181	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.28	1.28	1.28	1.28	1.19	1.19	1.19	1.19	1.19	1.19
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	34	1	0	198	0	0	0	1	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	180	0	0	117	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	755	15	120	801	118	182	246	53	15	215	200
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	199	4	32	211	31	48	65	14	4	57	53
Total Analysis Volume [veh/h]	69	795	16	126	843	124	192	259	56	16	226	211
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	15	26	0	13	24	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	6	28	28	8	30	30	11	22	22	28	15	15
g / C, Green / Cycle	0.08	0.40	0.40	0.12	0.43	0.43	0.16	0.32	0.32	0.40	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.24	0.08	0.29	0.29	0.12	0.10	0.10	0.02	0.13	0.15
s, saturation flow rate [veh/h]	1597	1676	1732	1597	1676	1668	1597	1676	1575	1062	1676	1425
c, Capacity [veh/h]	136	668	690	186	720	717	251	534	502	478	359	305
d1, Uniform Delay [s]	30.62	16.63	16.63	29.67	16.02	16.02	28.26	17.99	18.01	15.36	25.00	25.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.91	3.91	3.79	4.28	4.97	5.01	4.83	0.32	0.34	0.03	1.83	2.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.51	0.60	0.60	0.68	0.67	0.67	0.77	0.30	0.31	0.03	0.63	0.69
d, Delay for Lane Group [s/veh]	33.53	20.54	20.42	33.95	20.99	21.03	33.09	18.30	18.36	15.38	26.83	28.21
Lane Group LOS	C	C	C	C	C	C	C	B	B	B	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.14	4.97	5.11	2.09	6.11	6.09	3.19	1.81	1.73	0.16	3.31	3.20
50th-Percentile Queue Length [ft]	28.41	124.28	127.80	52.15	152.81	152.31	79.63	45.36	43.36	3.89	82.64	80.00
95th-Percentile Queue Length [veh]	2.05	8.63	8.82	3.75	10.17	10.14	5.73	3.27	3.12	0.28	5.95	5.76
95th-Percentile Queue Length [ft]	51.14	215.70	220.50	93.86	254.17	253.51	143.33	81.64	78.05	7.01	148.75	143.99

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.53	20.48	20.42	33.95	21.01	21.03	33.09	18.32	18.36	15.38	26.83	28.21
Movement LOS	C	C	C	C	C	C	C	B	B	B	C	C
d_A, Approach Delay [s/veh]	21.50			22.50			23.92			27.07		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.15											
Intersection LOS	C											
Intersection V/C	0.601											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	7.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑↑↑			↵ ↑↑↑			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	73	1127	11	49	434	11	19	2	13	22	8	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	38	0	0	178	0	0	0	6	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	16	0	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	834	0	0	755	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	1959	10	47	1358	10	19	2	19	24	8	87
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	516	3	12	357	3	5	1	5	6	2	23
Total Analysis Volume [veh/h]	74	2062	11	49	1429	11	20	2	20	25	8	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	10	21	0	0	29	0	0	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	42	42	5	41	41	7	7	7	7
g / C, Green / Cycle	0.10	0.70	0.70	0.08	0.69	0.69	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.43	0.43	0.03	0.30	0.30	0.02	0.01	0.02	0.07
s, saturation flow rate [veh/h]	1597	3192	1672	1597	3192	1670	1161	1502	1246	1442
c, Capacity [veh/h]	153	2240	1173	133	2200	1151	168	172	234	166
d1, Uniform Delay [s]	25.71	4.65	4.65	25.99	4.12	4.12	28.04	23.86	25.26	25.26
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.34	1.23	2.35	1.68	0.62	1.17	0.31	0.33	0.20	3.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

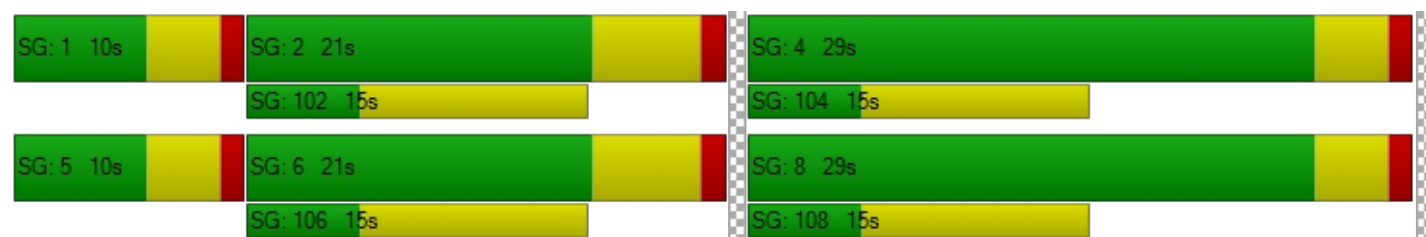
X, volume / capacity	0.48	0.61	0.61	0.37	0.43	0.43	0.12	0.13	0.11	0.60
d, Delay for Lane Group [s/veh]	28.05	5.89	7.00	27.68	4.73	5.29	28.36	24.19	25.46	28.78
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.01	2.30	2.77	0.67	1.41	1.66	0.27	0.27	0.31	1.39
50th-Percentile Queue Length [ft]	25.25	57.43	69.26	16.65	35.30	41.40	6.80	6.78	7.86	34.75
95th-Percentile Queue Length [veh]	1.82	4.13	4.99	1.20	2.54	2.98	0.49	0.49	0.57	2.50
95th-Percentile Queue Length [ft]	45.45	103.37	124.67	29.96	63.55	74.52	12.24	12.20	14.15	62.56

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.05	6.27	7.00	27.68	4.92	5.29	28.36	24.19	24.19	25.46	28.78	28.78
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	7.02			5.67			26.17			28.11		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.40											
Intersection LOS	A											
Intersection V/C	0.526											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.650

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	52	667	145	140	766	114	110	287	41	139	462	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	0.86	0.86	0.86	0.86	0.86	0.86
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	2	44	0	0	0	3	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	12	165	0	0	660	1	0	163	47	0	171	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	82	1090	194	190	1746	154	95	410	85	120	568	79
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	287	51	50	459	41	25	108	22	32	149	21
Total Analysis Volume [veh/h]	86	1147	204	200	1838	162	100	432	89	126	598	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	13	25	14	14	21	0	14	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	27	27	11	31	40	7	17	17	8	18	18
g / C, Green / Cycle	0.09	0.39	0.39	0.15	0.45	0.57	0.09	0.24	0.24	0.11	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.26	0.11	0.36	0.10	0.06	0.14	0.14	0.07	0.18	0.18
s, saturation flow rate [veh/h]	1774	3547	1722	1774	5074	1583	1774	1937	1824	1774	1863	1857
c, Capacity [veh/h]	160	1370	665	268	2271	856	170	463	436	194	470	469
d1, Uniform Delay [s]	30.45	17.72	17.72	28.41	16.75	8.24	30.33	23.53	23.56	29.89	23.95	23.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.78	2.55	5.16	4.09	3.25	0.11	3.22	1.14	1.24	3.65	2.15	2.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

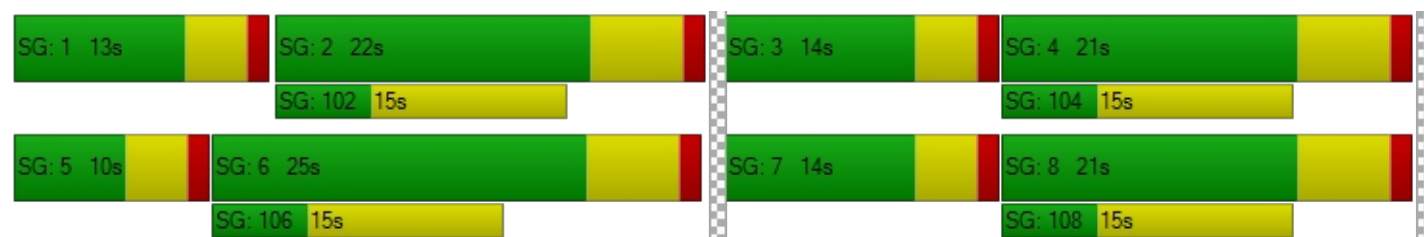
X, volume / capacity	0.54	0.66	0.66	0.74	0.81	0.19	0.59	0.58	0.58	0.65	0.73	0.73
d, Delay for Lane Group [s/veh]	33.23	20.27	22.88	32.50	20.00	8.34	33.55	24.67	24.79	33.54	26.10	26.12
Lane Group LOS	C	C	C	C	B	A	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.42	5.73	6.05	3.27	7.77	1.04	1.66	3.70	3.53	2.09	4.95	4.95
50th-Percentile Queue Length [ft]	35.54	143.22	151.17	81.81	194.31	25.88	41.60	92.58	88.21	52.37	123.77	123.63
95th-Percentile Queue Length [veh]	2.56	9.65	10.08	5.89	12.34	1.86	3.00	6.67	6.35	3.77	8.60	8.59
95th-Percentile Queue Length [ft]	63.98	241.35	251.99	147.26	308.62	46.58	74.88	166.64	158.77	94.26	214.99	214.80

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.23	20.81	22.88	32.50	20.00	8.34	33.55	24.72	24.79	33.54	26.11	26.12
Movement LOS	C	C	C	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	21.85			20.28			26.15			27.27		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	22.56											
Intersection LOS	C											
Intersection V/C	0.650											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.388

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	37	208	0	0	214	156	106	0	18	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	0.86	0.86	0.86	0.86	0.86	0.86
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	35	1	0	204	0	0	0	2	6	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	11	0	18	27	0	0	164	0	0	173	31
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	360	1	18	554	236	91	164	17	6	173	31
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	95	0	5	146	62	24	43	4	2	46	8
Total Analysis Volume [veh/h]	60	379	1	19	583	248	96	173	18	6	182	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	25	0	0	25	0	14	25	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	23	23	23	23	23	23	6	28	28	3	25	25
g / C, Green / Cycle	0.38	0.38	0.38	0.38	0.38	0.38	0.10	0.47	0.47	0.05	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.11	0.02	0.26	0.26	0.06	0.06	0.06	0.00	0.06	0.07
s, saturation flow rate [veh/h]	592	1676	1675	899	1676	1509	1597	1676	1622	1597	1676	1589
c, Capacity [veh/h]	208	642	641	378	642	578	170	787	762	76	689	653
d1, Uniform Delay [s]	24.21	12.88	12.88	15.59	15.45	15.46	25.50	8.95	8.96	27.33	11.14	11.16
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.76	0.25	0.25	0.05	1.28	1.43	2.95	0.32	0.34	0.44	0.49	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

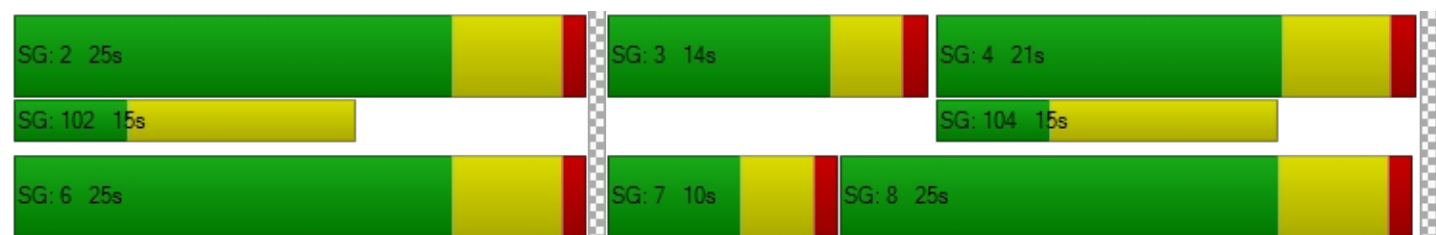
X, volume / capacity	0.29	0.30	0.30	0.05	0.68	0.68	0.57	0.12	0.12	0.08	0.16	0.16
d, Delay for Lane Group [s/veh]	24.96	13.14	13.14	15.65	16.73	16.89	28.45	9.27	9.30	27.77	11.62	11.70
Lane Group LOS	C	B	B	B	B	B	C	A	A	C	B	B
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.77	1.53	1.53	0.17	4.33	3.93	1.32	0.63	0.62	0.08	0.84	0.83
50th-Percentile Queue Length [ft]	19.21	38.34	38.32	4.29	108.31	98.28	33.05	15.74	15.55	2.12	21.10	20.83
95th-Percentile Queue Length [veh]	1.38	2.76	2.76	0.31	7.75	7.08	2.38	1.13	1.12	0.15	1.52	1.50
95th-Percentile Queue Length [ft]	34.57	69.02	68.98	7.72	193.65	176.90	59.49	28.33	28.00	3.82	37.99	37.49

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.96	13.14	13.14	15.65	16.77	16.89	28.45	9.28	9.30	27.77	11.65	11.70
Movement LOS	C	B	B	B	B	B	C	A	A	C	B	B
d_A, Approach Delay [s/veh]	14.75			16.78			15.69			12.10		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	15.53											
Intersection LOS	B											
Intersection V/C	0.388											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	793	58	78	245	0	0	0	0	57	0	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.86	0.86	0.86	0.86	0.86	0.86	0.96	0.96	0.96	0.96	0.96	0.96
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	39	0	0	186	0	0	0	6	5	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	16	0	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	45	736	95	47	793	58	136	238	77	45	91	32
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	1473	145	114	1203	58	136	238	83	105	91	175
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	388	38	30	317	15	36	63	22	28	24	46
Total Analysis Volume [veh/h]	48	1551	153	120	1266	61	143	251	87	111	96	184
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.2	5.2	0.0	3.2	5.2	0.0	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	22	0	10	22	0	17	21	0	17	21	10
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	5	36	36	8	39	39	9	11	11	7	9	19
g / C, Green / Cycle	0.07	0.52	0.52	0.11	0.56	0.56	0.13	0.15	0.15	0.10	0.13	0.27
(v / s)_i Volume / Saturation Flow Rate	0.02	0.36	0.36	0.04	0.27	0.27	0.09	0.08	0.06	0.07	0.03	0.13
s, saturation flow rate [veh/h]	3101	3192	1601	3101	3192	1637	1597	3192	1482	1597	3192	1425
c, Capacity [veh/h]	233	1645	825	354	1770	908	203	482	224	168	411	342
d1, Uniform Delay [s]	30.41	12.75	12.76	28.56	9.58	9.58	29.27	27.38	26.80	30.12	27.40	23.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.43	2.39	4.71	0.56	0.99	1.93	4.37	0.87	1.10	4.40	0.29	1.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

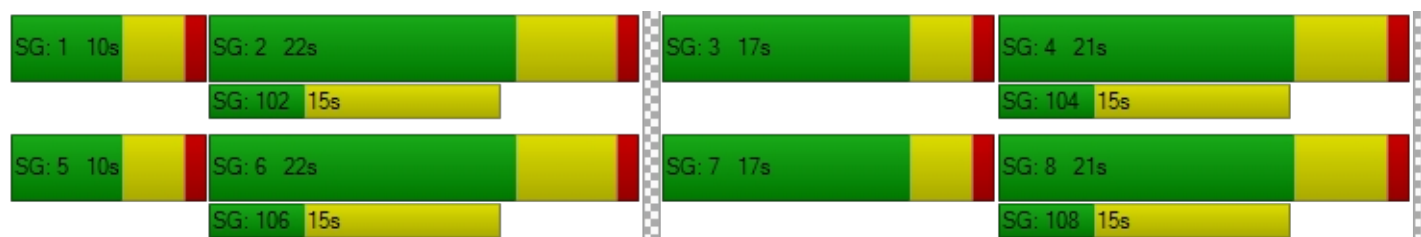
X, volume / capacity	0.21	0.69	0.69	0.34	0.50	0.50	0.70	0.52	0.39	0.66	0.23	0.54
d, Delay for Lane Group [s/veh]	30.85	15.14	17.48	29.12	10.57	11.51	33.64	28.26	27.90	34.53	27.69	24.53
Lane Group LOS	C	B	B	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.37	5.89	6.45	0.89	3.45	3.78	2.39	1.85	1.29	1.88	0.69	2.54
50th-Percentile Queue Length [ft]	9.28	147.19	161.31	22.36	86.34	94.48	59.71	46.34	32.16	47.09	17.26	63.60
95th-Percentile Queue Length [veh]	0.67	9.87	10.62	1.61	6.22	6.80	4.30	3.34	2.32	3.39	1.24	4.58
95th-Percentile Queue Length [ft]	16.70	246.67	265.46	40.24	155.41	170.06	107.48	83.41	57.89	84.76	31.06	114.48

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.85	15.77	17.48	29.12	10.86	11.51	33.64	28.26	27.90	34.53	27.69	24.53
Movement LOS	C	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.33			12.40			29.79			28.14		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.66											
Intersection LOS	B											
Intersection V/C	0.601											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	12.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	783	108	29	852	64	82	127	48	71	136	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	1.31	1.31	1.31	1.31	1.31	1.31
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	2	45	0	0	0	3	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	19	177	0	0	707	0	0	237	22	0	263	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	1257	145	41	1910	86	107	403	88	93	441	35
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	331	38	11	503	23	28	106	23	24	116	9
Total Analysis Volume [veh/h]	87	1323	153	43	2011	91	113	424	93	98	464	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	64	41	0	35	41	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	0	39	39	0	39	39	17	17	17	17	17	17
g / C, Green / Cycle	0.00	0.65	0.65	0.00	0.65	0.65	0.28	0.28	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	1.38	0.31	0.31	0.36	0.43	0.44	0.14	0.16	0.16	0.12	0.15	0.15
s, saturation flow rate [veh/h]	63	3192	1589	118	3192	1640	804	1676	1574	792	1676	1633
c, Capacity [veh/h]	120	2075	1033	120	2075	1066	233	475	446	226	475	463
d1, Uniform Delay [s]	30.00	5.32	5.32	30.00	6.50	6.52	25.82	18.31	18.34	25.67	18.15	18.16
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	31.52	0.78	1.57	8.15	1.73	3.37	1.57	1.03	1.12	1.31	0.93	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

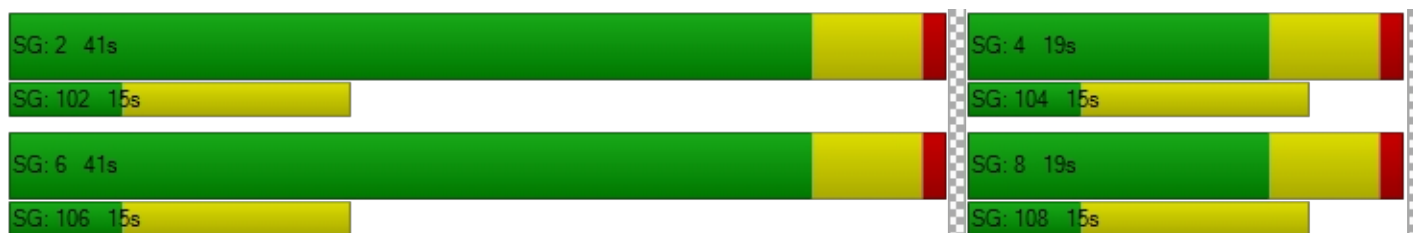
X, volume / capacity	0.73	0.47	0.48	0.36	0.67	0.67	0.49	0.56	0.56	0.43	0.53	0.54
d, Delay for Lane Group [s/veh]	61.52	6.10	6.88	38.15	8.22	9.90	27.39	19.34	19.46	26.98	19.08	19.13
Lane Group LOS	E	A	A	D	A	A	C	B	B	C	B	B
Critical Lane Group	No	No	No	No	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	2.50	2.00	2.22	0.99	3.56	4.17	1.55	2.85	2.71	1.32	2.69	2.64
50th-Percentile Queue Length [ft]	62.52	50.10	55.52	24.71	88.90	104.20	38.68	71.34	67.82	33.08	67.27	65.93
95th-Percentile Queue Length [veh]	4.50	3.61	4.00	1.78	6.40	7.50	2.78	5.14	4.88	2.38	4.84	4.75
95th-Percentile Queue Length [ft]	112.53	90.18	99.94	44.47	160.02	187.56	69.62	128.42	122.08	59.54	121.08	118.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	61.52	6.30	6.88	38.15	8.74	9.90	27.39	19.39	19.46	26.98	19.10	19.13
Movement LOS	E	A	A	D	A	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	9.43			9.38			20.83			20.39		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	12.19											
Intersection LOS	B											
Intersection V/C	0.596											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	10.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.301

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	48	243	5	28	215	24	56	50	20	7	48	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.31	1.31	1.31	1.31	1.31	1.31
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	37	0	0	212	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	11	6	0	27	0	0	245	0	13	268	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	415	14	42	564	36	73	311	28	22	331	18
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	109	4	11	148	9	19	82	7	6	87	5
Total Analysis Volume [veh/h]	78	437	15	44	594	38	77	327	29	23	348	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	31	0	0	31	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	39	39	39	39	39	39	17	17	17	17	17	17
g / C, Green / Cycle	0.65	0.65	0.65	0.65	0.65	0.65	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.11	0.14	0.14	0.05	0.19	0.19	0.08	0.11	0.11	0.03	0.11	0.11
s, saturation flow rate [veh/h]	712	1676	1657	841	1676	1641	910	1676	1629	919	1676	1646
c, Capacity [veh/h]	516	1080	1068	610	1080	1057	278	485	471	282	485	476
d1, Uniform Delay [s]	6.66	4.39	4.39	5.53	4.69	4.69	22.37	16.99	17.00	20.88	17.04	17.05
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.62	0.44	0.45	0.23	0.70	0.71	0.53	0.47	0.49	0.12	0.49	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.15	0.21	0.21	0.07	0.30	0.30	0.28	0.37	0.37	0.08	0.38	0.38
d, Delay for Lane Group [s/veh]	7.28	4.83	4.84	5.75	5.38	5.40	22.90	17.46	17.50	21.00	17.53	17.56
Lane Group LOS	A	A	A	A	A	A	C	B	B	C	B	B
Critical Lane Group	No	No	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.40	0.69	0.68	0.19	1.04	1.03	0.92	1.78	1.75	0.26	1.84	1.82
50th-Percentile Queue Length [ft]	10.10	17.23	17.12	4.63	26.10	25.73	23.00	44.52	43.74	6.38	45.88	45.42
95th-Percentile Queue Length [veh]	0.73	1.24	1.23	0.33	1.88	1.85	1.66	3.21	3.15	0.46	3.30	3.27
95th-Percentile Queue Length [ft]	18.19	31.02	30.82	8.34	46.98	46.31	41.41	80.14	78.74	11.48	82.58	81.75

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	7.28	4.84	4.84	5.75	5.39	5.40	22.90	17.48	17.50	21.00	17.55	17.56
Movement LOS	A	A	A	A	A	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	5.20			5.42			18.44			17.75		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	10.51											
Intersection LOS	B											
Intersection V/C	0.301											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	18.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	1	950	16	30	401	3	10	3	0	37	4	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.86	0.86	0.86	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	40	0	0	196	0	0	0	0	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	16	0	0	13	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	93	793	77	28	927	31	59	141	116	38	85	79
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	1666	91	54	1481	34	69	144	116	79	89	162
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	438	24	14	390	9	18	38	31	21	23	43
Total Analysis Volume [veh/h]	99	1754	96	57	1559	36	73	152	122	83	94	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	0	10	22	0	10	21	0	17	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	37	37	6	36	36	6	13	13	6	13	13
g / C, Green / Cycle	0.10	0.53	0.53	0.09	0.51	0.51	0.09	0.18	0.18	0.09	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.06	0.38	0.38	0.04	0.33	0.33	0.05	0.05	0.08	0.05	0.06	0.12
s, saturation flow rate [veh/h]	1597	3192	1632	1597	3192	1657	1597	3192	1482	1597	1676	1425
c, Capacity [veh/h]	160	1680	859	136	1633	848	137	585	272	145	315	268
d1, Uniform Delay [s]	30.20	12.72	12.75	30.36	12.44	12.44	30.64	24.52	25.45	30.53	24.46	26.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.84	2.80	5.42	2.03	1.96	3.74	3.16	0.23	1.16	3.55	0.53	2.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

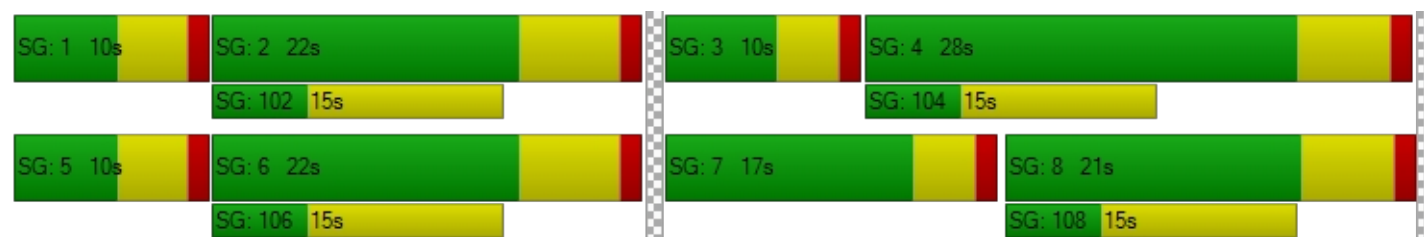
X, volume / capacity	0.62	0.73	0.73	0.42	0.64	0.64	0.53	0.26	0.45	0.57	0.30	0.64
d, Delay for Lane Group [s/veh]	34.04	15.52	18.16	32.39	14.40	16.18	33.80	24.75	26.61	34.09	24.99	28.77
Lane Group LOS	C	B	B	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.67	6.45	7.25	0.93	5.25	5.87	1.23	1.02	1.76	1.40	1.29	2.61
50th-Percentile Queue Length [ft]	41.63	161.22	181.23	23.28	131.19	146.72	30.63	25.50	43.88	35.01	32.19	65.28
95th-Percentile Queue Length [veh]	3.00	10.61	11.66	1.68	9.00	9.84	2.21	1.84	3.16	2.52	2.32	4.70
95th-Percentile Queue Length [ft]	74.93	265.33	291.62	41.90	225.12	246.05	55.13	45.89	78.99	63.02	57.94	117.51

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.04	16.32	18.16	32.39	14.98	16.18	33.80	24.75	26.61	34.09	24.99	28.77
Movement LOS	C	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	17.31			15.61			27.31			29.02		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.41											
Intersection LOS	B											
Intersection V/C	0.586											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	185.00	100.00	100.00	165.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	98	775	10	13	831	144	155	52	66	30	145	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	0.90	0.90	0.90	0.90	0.90	0.90
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	48	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	21	0	0	16	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	24	194	0	0	729	0	0	6	30	0	14	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	1264	13	17	1907	193	140	53	92	27	145	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	333	3	4	502	51	37	14	24	7	38	2
Total Analysis Volume [veh/h]	163	1331	14	18	2007	203	147	56	97	28	153	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	26	0	22	38	0	11	32	0	26	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	8	50	50	4	46	46	9	20	20	0	9	9
g / C, Green / Cycle	0.10	0.63	0.63	0.05	0.58	0.58	0.11	0.25	0.25	0.00	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.13	0.28	0.28	0.01	0.46	0.47	0.09	0.02	0.07	0.74	0.05	0.05
s, saturation flow rate [veh/h]	1270	3192	1668	1270	3192	1599	1597	3192	1482	38	1676	1651
c, Capacity [veh/h]	201	2011	1050	139	1847	926	180	786	365	90	182	179
d1, Uniform Delay [s]	37.61	7.58	7.58	37.49	13.12	13.27	34.70	23.13	24.32	40.00	33.37	33.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.58	0.70	1.34	0.41	3.60	7.35	8.81	0.04	0.39	8.78	1.67	1.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.44	0.44	0.13	0.79	0.80	0.82	0.07	0.27	0.31	0.44	0.44
d, Delay for Lane Group [s/veh]	45.20	8.28	8.91	37.91	16.73	20.62	43.51	23.17	24.70	48.78	35.04	35.11
Lane Group LOS	D	A	A	D	B	C	D	C	C	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.59	3.17	3.50	0.35	9.08	10.26	3.09	0.39	1.43	0.84	1.47	1.47
50th-Percentile Queue Length [ft]	89.78	79.29	87.49	8.63	227.02	256.53	77.31	9.66	35.80	21.05	36.81	36.67
95th-Percentile Queue Length [veh]	6.46	5.71	6.30	0.62	14.02	15.51	5.57	0.70	2.58	1.52	2.65	2.64
95th-Percentile Queue Length [ft]	161.61	142.72	157.47	15.54	350.58	387.87	139.15	17.40	64.43	37.88	66.25	66.01

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	45.20	8.49	8.91	37.91	17.78	20.62	43.51	23.17	24.70	48.78	35.07	35.11
Movement LOS	D	A	A	D	B	C	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	12.46			18.20			33.63			37.12		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	18.09											
Intersection LOS	B											
Intersection V/C	0.734											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	9.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.242

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	65	219	6	21	175	44	34	14	16	7	42	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	0.90	0.90	0.90	0.90	0.90	0.90
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	38	0	0	213	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	10	17	0	1	39	0	0	6	0	0	13	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	386	9	33	516	66	31	19	14	6	51	20
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	102	2	9	136	17	8	5	4	2	13	5
Total Analysis Volume [veh/h]	114	406	9	35	543	69	33	20	15	6	54	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	36	0	0	36	0	0	24	0	0	24	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	34	34	34	34	34	34	22	22	22	22	22	22
g / C, Green / Cycle	0.57	0.57	0.57	0.57	0.57	0.57	0.37	0.37	0.37	0.37	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.18	0.14	0.14	0.05	0.21	0.21	0.03	0.01	0.01	0.01	0.03	0.03
s, saturation flow rate [veh/h]	644	1487	1476	772	1487	1429	1053	1487	1290	1092	1487	1352
c, Capacity [veh/h]	400	843	836	490	843	810	470	545	473	493	545	496
d1, Uniform Delay [s]	11.66	6.55	6.55	8.52	7.13	7.13	13.82	12.18	12.20	13.09	12.35	12.37
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.79	0.70	0.71	0.28	1.25	1.31	0.29	0.11	0.14	0.05	0.25	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.29	0.25	0.25	0.07	0.37	0.37	0.07	0.03	0.04	0.01	0.07	0.08
d, Delay for Lane Group [s/veh]	13.44	7.25	7.26	8.80	8.37	8.44	14.11	12.29	12.34	13.13	12.59	12.67
Lane Group LOS	B	A	A	A	A	A	B	B	B	B	B	B
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	0.98	0.99	0.99	0.22	1.64	1.60	0.30	0.15	0.15	0.05	0.32	0.32
50th-Percentile Queue Length [ft]	24.46	24.84	24.73	5.44	41.07	39.98	7.58	3.65	3.64	1.31	7.93	7.92
95th-Percentile Queue Length [veh]	1.76	1.79	1.78	0.39	2.96	2.88	0.55	0.26	0.26	0.09	0.57	0.57
95th-Percentile Queue Length [ft]	44.03	44.71	44.51	9.79	73.92	71.97	13.65	6.56	6.56	2.35	14.27	14.25

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.44	7.25	7.26	8.80	8.40	8.44	14.11	12.29	12.34	13.13	12.62	12.67
Movement LOS	B	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	8.59			8.43			13.18			12.67		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	8.99											
Intersection LOS	A											
Intersection V/C	0.242											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.621

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	524	1	323	0	660	194	44	1188	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	63	0	0	0	33	0	0	5	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	5	0	0	0	8	0	0	9	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	174	0	0	307	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	592	1	323	0	789	169	38	1355	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	156	0	85	0	208	44	10	357	0	0	0	0
Total Analysis Volume [veh/h]	623	1	340	0	831	178	40	1426	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	0	20	0	19	39	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	30	30	5	37
g / C, Green / Cycle	0.32	0.32	0.32	0.50	0.50	0.08	0.62
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.27	0.24	0.25	0.01	0.35
s, saturation flow rate [veh/h]	1416	1416	1264	2831	1360	2750	4050
c, Capacity [veh/h]	448	449	400	1424	684	221	2498
d1, Uniform Delay [s]	17.97	17.97	19.16	9.72	9.85	25.74	6.80
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.96	1.95	5.25	1.13	2.52	0.39	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

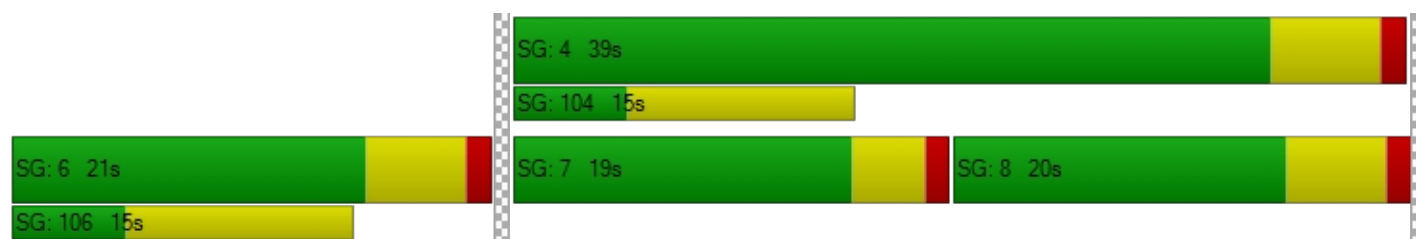
X, volume / capacity	0.70	0.70	0.85	0.47	0.49	0.18	0.57
d, Delay for Lane Group [s/veh]	19.92	19.92	24.42	10.85	12.37	26.13	7.76
Lane Group LOS	B	B	C	B	B	C	A
Critical Lane Group	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.47	3.47	4.33	2.39	2.68	0.26	2.46
50th-Percentile Queue Length [ft]	86.63	86.63	108.22	59.84	66.93	6.39	61.48
95th-Percentile Queue Length [veh]	6.24	6.24	7.74	4.31	4.82	0.46	4.43
95th-Percentile Queue Length [ft]	155.94	155.93	193.52	107.71	120.48	11.51	110.66

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	19.92	19.92	24.42	0.00	11.14	12.37	26.13	7.76	0.00	0.00	0.00	0.00
Movement LOS	B	B	C		B	B	C	A				
d_A, Approach Delay [s/veh]	21.51			11.36			8.26			0.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	12.88											
Intersection LOS	B											
Intersection V/C	0.621											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.878

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Base Volume Input [veh/h]	417	68	48	29	0	441	196	815	177	0	914	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	1.00	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	98	0	0	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	174	0	0	307	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	417	68	48	29	0	441	171	995	154	0	1135	17
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	18	13	8	0	116	45	262	41	0	299	4
Total Analysis Volume [veh/h]	439	72	51	31	0	464	180	1047	162	0	1195	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Permiss	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups						1,3						
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	10	0	15	15	39	0	0	24	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No		No	No	No			No	
Maximum Recall		No		No		No	No	No			No	
Pedestrian Recall		No		No		No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	8	44	13	37	22	22
g / C, Green / Cycle	0.27	0.27	0.27	0.11	0.63	0.19	0.53	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.04	0.02	0.37	0.13	0.26	0.22	0.21
s, saturation flow rate [veh/h]	1127	1203	1264	1416	1264	1416	4050	4050	1472
c, Capacity [veh/h]	393	415	343	162	755	263	2141	1273	462
d1, Uniform Delay [s]	24.79	23.78	19.36	28.07	8.98	26.59	10.49	21.22	20.73
k, delay calibration	0.11	0.11	0.11	0.11	0.35	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.70	1.58	0.20	0.57	2.59	3.14	0.80	3.45	7.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.63	0.63	0.15	0.19	0.61	0.68	0.49	0.71	0.66
d, Delay for Lane Group [s/veh]	26.50	25.36	19.56	28.64	11.57	29.72	11.29	24.67	27.82
Lane Group LOS	C	C	B	C	B	C	B	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	3.74	3.81	0.59	0.47	3.84	2.81	2.90	4.32	4.73
50th-Percentile Queue Length [ft]	93.42	95.28	14.86	11.64	95.99	70.15	72.56	107.89	118.21
95th-Percentile Queue Length [veh]	6.73	6.86	1.07	0.84	6.91	5.05	5.22	7.72	8.29
95th-Percentile Queue Length [ft]	168.16	171.51	26.75	20.95	172.77	126.27	130.61	193.07	207.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.01	25.36	19.56	28.64	0.00	11.57	29.72	11.29	0.00	0.00	25.42	27.82
Movement LOS	C	C	B	C		B	C	B			C	C
d_A, Approach Delay [s/veh]	25.34			12.64			14.00			25.46		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	19.60											
Intersection LOS	B											
Intersection V/C	0.878											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	52	341	47	43	395	81	72	582	72	35	736	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	3	0	0	0	98	0	1	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	174	0	0	307	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	341	52	46	395	81	63	792	63	31	980	30
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	90	14	12	104	21	17	208	17	8	258	8
Total Analysis Volume [veh/h]	55	359	55	48	416	85	66	834	66	33	1032	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	18	29	10	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	17	17	5	17	17	6	35	43	5	34	34
g / C, Green / Cycle	0.08	0.24	0.24	0.08	0.24	0.24	0.08	0.50	0.61	0.07	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.04	0.13	0.04	0.03	0.17	0.17	0.05	0.29	0.03	0.02	0.36	0.36
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1401	1416	2831	2237	1416	1487	1471
c, Capacity [veh/h]	112	686	306	107	355	335	121	1421	1293	93	718	710
d1, Uniform Delay [s]	30.89	23.00	21.00	30.97	24.50	24.56	30.71	12.31	6.43	31.26	14.64	14.64
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.33	0.62	0.28	2.94	2.78	3.07	3.80	1.78	0.02	2.25	6.92	7.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.49	0.52	0.18	0.45	0.72	0.73	0.55	0.59	0.05	0.35	0.75	0.75
d, Delay for Lane Group [s/veh]	34.22	23.62	21.28	33.91	27.28	27.62	34.51	14.10	6.44	33.51	21.56	21.63
Lane Group LOS	C	C	C	C	C	C	C	B	A	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.94	2.40	0.68	0.81	3.83	3.68	1.13	4.10	0.17	0.56	6.97	6.91
50th-Percentile Queue Length [ft]	23.43	60.02	16.97	20.37	95.71	91.96	28.23	102.43	4.21	13.99	174.30	172.87
95th-Percentile Queue Length [veh]	1.69	4.32	1.22	1.47	6.89	6.62	2.03	7.37	0.30	1.01	11.30	11.23
95th-Percentile Queue Length [ft]	42.18	108.04	30.54	36.67	172.28	165.53	50.82	184.37	7.57	25.18	282.56	280.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.22	23.62	21.28	33.91	27.41	27.62	34.51	14.10	6.44	33.51	21.59	21.63
Movement LOS	C	C	C	C	C	C	C	B	A	C	C	C
d_A, Approach Delay [s/veh]	24.59			28.02			14.97			21.95		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	21.24											
Intersection LOS	C											
Intersection V/C	0.620											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	24.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.705

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	2	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	62	635	227	26	707	302	114	316	32	162	603	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	3	0	0	0	113	0	1	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	174	0	0	307	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	635	232	29	707	302	99	576	28	142	867	46
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	167	61	8	186	79	26	152	7	37	228	12
Total Analysis Volume [veh/h]	65	668	244	31	744	318	104	606	29	149	913	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	18	29	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	22	22	4	21	21	7	28	28	7	28	28
g / C, Green / Cycle	0.08	0.32	0.32	0.06	0.30	0.30	0.11	0.40	0.40	0.10	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.19	0.02	0.26	0.25	0.07	0.22	0.22	0.05	0.32	0.04
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1463	2750	2831	1264
c, Capacity [veh/h]	117	905	404	91	852	381	152	599	589	272	1117	499
d1, Uniform Delay [s]	30.85	21.19	20.07	31.34	23.19	22.85	30.11	15.91	15.91	30.04	18.94	13.34
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.15	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.03	1.20	1.45	2.20	2.98	6.52	5.37	3.39	3.45	1.71	6.67	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

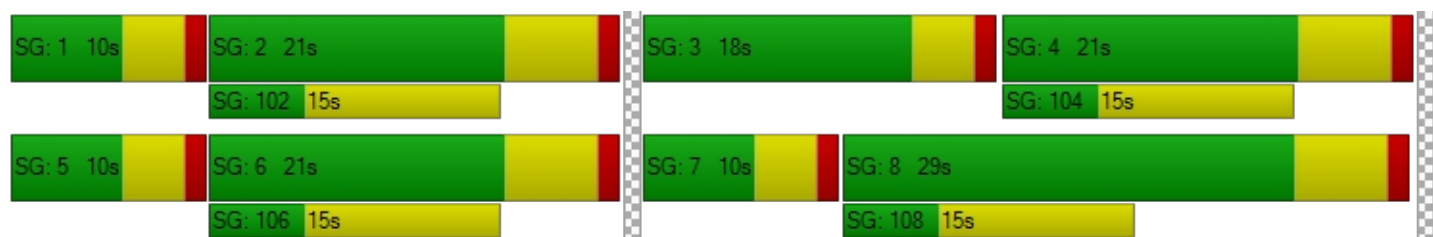
X, volume / capacity	0.55	0.74	0.60	0.34	0.87	0.84	0.69	0.53	0.53	0.55	0.82	0.10
d, Delay for Lane Group [s/veh]	34.88	22.39	21.52	33.54	26.17	29.37	35.49	19.30	19.37	31.75	25.61	13.72
Lane Group LOS	C	C	C	C	C	C	D	B	B	C	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.12	4.46	3.15	0.53	5.52	5.04	1.80	3.94	3.89	1.18	6.72	0.47
50th-Percentile Queue Length [ft]	27.97	111.62	78.69	13.16	137.94	125.97	45.03	98.59	97.36	29.54	168.08	11.86
95th-Percentile Queue Length [veh]	2.01	7.93	5.67	0.95	9.37	8.72	3.24	7.10	7.01	2.13	10.98	0.85
95th-Percentile Queue Length [ft]	50.35	198.25	141.64	23.70	234.25	218.00	81.06	177.45	175.24	53.18	274.39	21.35

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.88	22.39	21.52	33.54	26.17	29.37	35.49	19.33	19.37	31.75	25.61	13.72
Movement LOS	C	C	C	C	C	C	D	B	B	C	C	B
d_A, Approach Delay [s/veh]	23.00			27.31			21.61			25.92		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.77											
Intersection LOS	C											
Intersection V/C	0.705											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.472

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	24	131	60	57	73	77	73	294	22	47	605	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.11	1.11	1.11	1.11	1.11	1.11
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	4	0	0	0	132	0	1	23	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	15	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	174	0	0	307	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	131	65	61	73	77	81	646	24	53	1017	91
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	34	17	16	19	20	21	170	6	14	268	24
Total Analysis Volume [veh/h]	25	138	68	64	77	81	85	680	25	56	1071	96
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	16	29	0	10	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	11	11	6	13	13	6	40	40	6	39	39
g / C, Green / Cycle	0.06	0.16	0.16	0.08	0.18	0.18	0.09	0.57	0.57	0.08	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.05	0.05	0.05	0.06	0.06	0.16	0.16	0.04	0.27	0.27
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1460	1416	2831	1425
c, Capacity [veh/h]	85	236	200	117	270	229	131	1600	825	112	1563	787
d1, Uniform Delay [s]	31.50	27.33	26.20	30.84	24.74	25.06	30.66	7.92	7.92	30.89	9.68	9.68
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.91	2.31	1.00	3.91	0.58	0.92	5.28	0.46	0.89	3.38	1.13	2.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

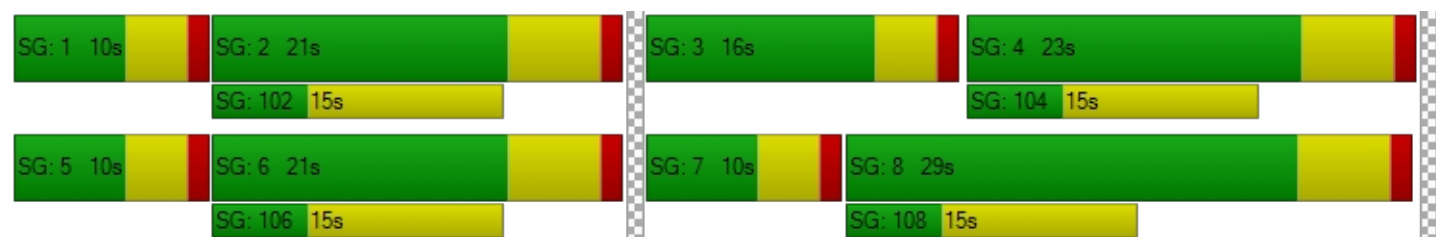
X, volume / capacity	0.30	0.59	0.34	0.55	0.29	0.35	0.65	0.29	0.29	0.50	0.50	0.50
d, Delay for Lane Group [s/veh]	33.41	29.64	27.20	34.75	25.31	25.99	35.93	8.38	8.82	34.27	10.81	11.92
Lane Group LOS	C	C	C	C	C	C	D	A	A	C	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.43	2.13	0.99	1.10	1.07	1.15	1.49	1.52	1.67	0.96	3.10	3.37
50th-Percentile Queue Length [ft]	10.64	53.35	24.81	27.49	26.63	28.70	37.18	37.96	41.81	23.88	77.58	84.28
95th-Percentile Queue Length [veh]	0.77	3.84	1.79	1.98	1.92	2.07	2.68	2.73	3.01	1.72	5.59	6.07
95th-Percentile Queue Length [ft]	19.15	96.04	44.65	49.48	47.93	51.67	66.92	68.32	75.26	42.98	139.65	151.70

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.41	29.64	27.20	34.75	25.31	25.99	35.93	8.52	8.82	34.27	11.12	11.92
Movement LOS	C	C	C	C	C	C	D	A	A	C	B	B
d_A, Approach Delay [s/veh]	29.33			28.28			11.47			12.24		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.04											
Intersection LOS	B											
Intersection V/C	0.472											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	145	763	32	24	702	169	89	165	94	46	335	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	1.11	1.11	1.11	1.11	1.11	1.11
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	8	0	15	36	0	0	61	87	0	10	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	15	21	0	0	16	0	0	0	14	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	37	216	1	1	757	0	0	140	77	3	300	3
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	261	1267	44	48	1750	226	99	384	282	54	682	55
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	333	12	13	461	59	26	101	74	14	179	14
Total Analysis Volume [veh/h]	275	1334	46	51	1842	238	104	404	297	57	718	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	26	0	13	29	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	30	30	5	27	27	19	19	19	19	19	19
g / C, Green / Cycle	0.13	0.50	0.50	0.09	0.45	0.45	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.09	0.29	0.03	0.03	0.40	0.17	0.16	0.13	0.21	0.09	0.16	0.04
s, saturation flow rate [veh/h]	3101	4567	1425	1597	4567	1425	658	3192	1425	668	4567	1425
c, Capacity [veh/h]	413	2264	707	140	2055	641	234	1011	451	201	1446	451
d1, Uniform Delay [s]	24.73	10.77	7.88	25.81	15.21	10.89	24.39	16.04	17.70	25.35	16.62	14.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.85	1.13	0.18	1.59	6.63	1.65	1.33	0.26	1.64	0.77	0.26	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.67	0.59	0.07	0.37	0.90	0.37	0.45	0.40	0.66	0.28	0.50	0.13
d, Delay for Lane Group [s/veh]	26.57	11.90	8.06	27.40	21.84	12.54	25.72	16.29	19.34	26.11	16.89	14.73
Lane Group LOS	C	B	A	C	C	B	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.78	3.40	0.27	0.69	7.26	1.96	1.38	1.90	3.23	0.75	2.32	0.50
50th-Percentile Queue Length [ft]	44.55	85.07	6.86	17.21	181.51	48.97	34.43	47.45	80.67	18.69	58.05	12.57
95th-Percentile Queue Length [veh]	3.21	6.12	0.49	1.24	11.68	3.53	2.48	3.42	5.81	1.35	4.18	0.90
95th-Percentile Queue Length [ft]	80.18	153.12	12.34	30.98	291.98	88.15	61.97	85.41	145.20	33.65	104.48	22.62

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.57	11.90	8.06	27.40	21.84	12.54	25.72	16.29	19.34	26.11	16.89	14.73
Movement LOS	C	B	A	C	C	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	14.23			20.94			18.63			17.37		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	18.00											
Intersection LOS	B											
Intersection V/C	0.700											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	10.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.286

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↵			↵ ↑ ↵			↵ ↑ ↑ ↑ ↵			↵ ↑ ↑ ↑ ↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	21	166	22	35	115	22	32	163	9	47	389	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	13	38	0	0	214	0	0	0	76	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	16	6	1	39	0	0	159	0	11	343	2
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	305	39	54	427	33	32	322	85	58	732	73
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	80	10	14	112	9	8	85	22	15	193	19
Total Analysis Volume [veh/h]	47	321	41	57	449	35	34	339	89	61	771	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	30	0	0	30	0	0	30	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	28	28	28	28	28	28	28	28	28	28	28	28
g / C, Green / Cycle	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.06	0.11	0.11	0.06	0.15	0.15	0.06	0.07	0.06	0.07	0.14	0.14
s, saturation flow rate [veh/h]	817	1676	1611	914	1676	1634	582	4567	1425	933	4567	1579
c, Capacity [veh/h]	413	782	752	471	782	763	332	2131	665	500	2131	737
d1, Uniform Delay [s]	13.10	9.58	9.60	12.16	9.99	10.00	12.91	9.22	9.10	11.28	9.89	9.92
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.56	0.70	0.74	0.53	1.04	1.08	0.62	0.16	0.42	0.50	0.35	1.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.11	0.23	0.24	0.12	0.31	0.31	0.10	0.16	0.13	0.12	0.29	0.30
d, Delay for Lane Group [s/veh]	13.66	10.28	10.34	12.69	11.03	11.08	13.53	9.38	9.52	11.78	10.24	10.96
Lane Group LOS	B	B	B	B	B	B	B	A	A	B	B	B
Critical Lane Group	No	No	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.41	1.20	1.18	0.46	1.69	1.66	0.32	0.71	0.60	0.50	1.42	1.64
50th-Percentile Queue Length [ft]	10.21	30.06	29.48	11.57	42.13	41.46	7.99	17.73	15.10	12.41	35.38	40.91
95th-Percentile Queue Length [veh]	0.73	2.16	2.12	0.83	3.03	2.99	0.58	1.28	1.09	0.89	2.55	2.95
95th-Percentile Queue Length [ft]	18.37	54.10	53.06	20.83	75.83	74.63	14.38	31.91	27.19	22.33	63.69	73.63

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.66	10.31	10.34	12.69	11.05	11.08	13.53	9.38	9.52	11.78	10.38	10.96
Movement LOS	B	B	B	B	B	B	B	A	A	B	B	B
d_A, Approach Delay [s/veh]	10.70			11.23			9.71			10.52		
Approach LOS	B			B			A			B		
d_I, Intersection Delay [s/veh]	10.55											
Intersection LOS	B											
Intersection V/C	0.286											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	31.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	0	0	0	2	0	1	2	0	1
Pocket Length [ft]	500.00	100.00	280.00	100.00	100.00	100.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	40.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	173	876	239	30	356	82	39	130	47	151	275	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	41	35	0	200	0	0	0	0	166	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	9	7	0	9	0	0	0	0	7	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	233	1006	316	5	1215	51	113	180	231	299	282	16
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	368	1739	544	28	1702	115	152	310	278	623	557	66
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	97	458	143	7	448	30	40	82	73	164	147	17
Total Analysis Volume [veh/h]	387	1831	573	29	1792	121	160	326	293	656	586	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	23	16	10	22	0	10	21	0	16	27	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	9	33	5	29	29	7	10	14	17	17
g / C, Green / Cycle	0.13	0.47	0.07	0.41	0.41	0.10	0.14	0.20	0.24	0.24
(v / s)_j Volume / Saturation Flow Rate	0.12	0.40	0.01	0.39	0.08	0.05	0.07	0.21	0.13	0.05
s, saturation flow rate [veh/h]	3101	4567	3101	4567	1425	3101	4567	3101	4567	1425
c, Capacity [veh/h]	399	2160	213	1886	589	310	658	620	1115	348
d1, Uniform Delay [s]	30.37	16.23	30.65	19.85	13.18	29.90	27.61	28.00	22.93	21.01
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.09	4.37	0.29	11.89	0.79	1.33	0.58	34.64	0.39	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

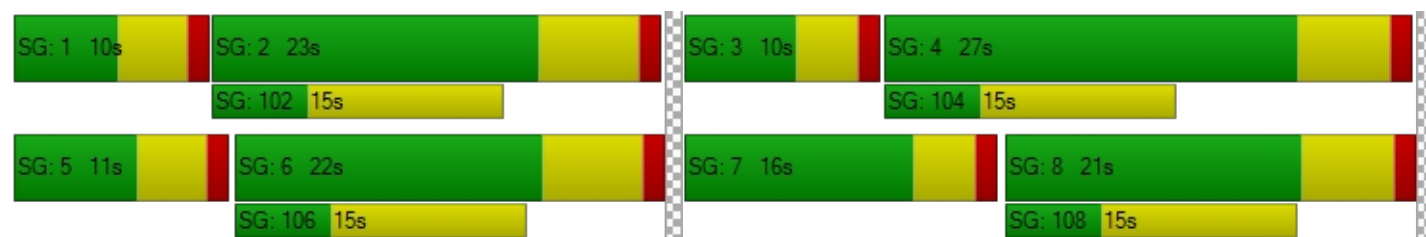
X, volume / capacity	0.97	0.85	0.14	0.95	0.21	0.52	0.50	1.06	0.53	0.20
d, Delay for Lane Group [s/veh]	45.46	20.60	30.93	31.74	13.97	31.23	28.19	62.64	23.32	21.28
Lane Group LOS	D	C	C	C	B	C	C	F	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	3.84	7.89	0.22	9.78	1.17	1.23	1.57	7.63	2.54	0.83
50th-Percentile Queue Length [ft]	96.09	197.34	5.54	244.49	29.13	30.83	39.17	190.78	63.41	20.86
95th-Percentile Queue Length [veh]	6.92	12.50	0.40	14.91	2.10	2.22	2.82	12.49	4.57	1.50
95th-Percentile Queue Length [ft]	172.97	312.53	9.97	372.71	52.44	55.49	70.51	312.32	114.14	37.55

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	45.46	20.60	0.00	30.93	31.74	13.97	31.23	28.19	0.00	62.64	23.32	21.28
Movement LOS	D	C		C	C	B	C	C		F	C	C
d_A, Approach Delay [s/veh]	24.93			30.62			29.19			42.89		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	31.09											
Intersection LOS	C											
Intersection V/C	0.800											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	35.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	240.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	106	428	253	95	173	24	24	261	60	133	398	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.12	1.12	1.12	0.72	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	35	0	0	166	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	14	0	0	13	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	38	431	164	103	368	72	170	1217	1	384	676	58
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	859	417	198	541	96	197	1558	68	480	1142	183
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	226	110	52	142	25	52	410	18	126	301	48
Total Analysis Volume [veh/h]	152	904	439	208	569	101	207	1640	72	505	1202	193
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	3
Auxiliary Signal Groups			2,7			3,6			5,8			3,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	11	29	17	10	28	11	11	34	11	17	40	11
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	8	27	44	8	27	38	9	32	42	15	38	49
g / C, Green / Cycle	0.08	0.30	0.49	0.09	0.31	0.43	0.10	0.36	0.46	0.17	0.42	0.54
(v / s)_i Volume / Saturation Flow Rate	0.05	0.28	0.31	0.07	0.12	0.07	0.08	0.36	0.05	0.16	0.26	0.14
s, saturation flow rate [veh/h]	3101	3192	1425	3101	4567	1425	2467	4567	1425	3101	4567	1425
c, Capacity [veh/h]	262	958	662	276	1390	573	299	1624	624	517	1928	716
d1, Uniform Delay [s]	39.67	30.76	18.65	40.04	24.87	17.31	40.78	29.00	14.98	37.33	20.39	12.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.03	18.34	5.18	4.18	0.89	0.15	2.85	12.93	0.08	13.77	0.33	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

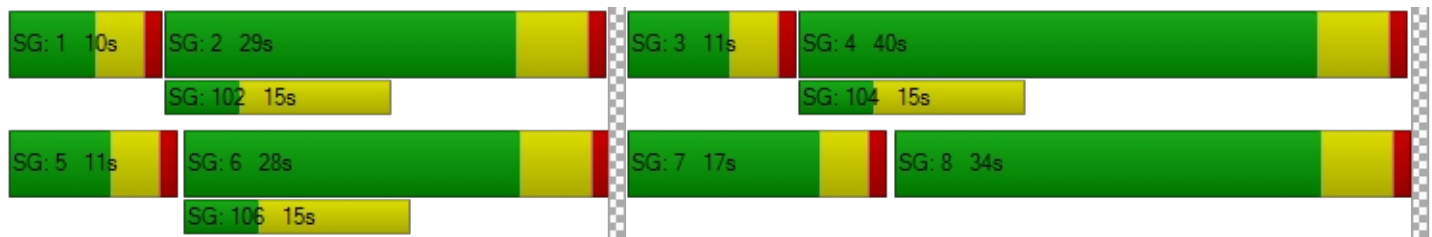
X, volume / capacity	0.58	0.94	0.66	0.75	0.41	0.18	0.69	1.01	0.12	0.98	0.62	0.27
d, Delay for Lane Group [s/veh]	41.70	49.11	23.83	44.22	25.76	17.45	43.63	41.93	15.06	51.10	20.72	13.10
Lane Group LOS	D	D	C	D	C	B	D	F	B	D	C	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.64	11.37	7.33	2.33	3.15	1.28	2.31	12.67	0.83	6.27	6.10	2.07
50th-Percentile Queue Length [ft]	40.96	284.26	183.24	58.18	78.85	32.05	57.87	316.80	20.72	156.64	152.48	51.82
95th-Percentile Queue Length [veh]	2.95	16.90	11.77	4.19	5.68	2.31	4.17	18.63	1.49	10.37	10.15	3.73
95th-Percentile Queue Length [ft]	73.73	422.51	294.24	104.73	141.93	57.70	104.17	465.77	37.29	259.27	253.74	93.28

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	41.70	49.11	23.83	44.22	25.76	17.45	43.63	41.93	15.06	51.10	20.72	13.10
Movement LOS	D	D	C	D	C	B	D	F	B	D	C	B
d_A, Approach Delay [s/veh]	40.93			29.18			41.11			28.02		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	35.36											
Intersection LOS	D											
Intersection V/C	0.872											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.983

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				⇐⇐⇐			⇐⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	0	0	0	263	0	470	0	425	141	0	338	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.72	1.00	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	156	0	35	0	0	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	11	0	14	0	0	2	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	1207	0	1399	320	0	797	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	263	0	1844	0	1754	422	0	1052	60
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	69	0	485	0	462	111	0	277	16
Total Analysis Volume [veh/h]	0	0	0	277	0	1941	0	1846	444	0	1107	63
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal group	0	0	0	1	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	4.4	0.0	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	36	0	0	0	32	0	0	24	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	10	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	C
C, Cycle Length [s]		60	60	60
L, Total Lost Time per Cycle [s]		2.00	0.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		1.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	0.00	1.00
g_i, Effective Green Time [s]		34	0	22
g / C, Green / Cycle		0.57	0.00	0.37
(v / s)_i Volume / Saturation Flow Rate		0.64	0.40	0.35
s, saturation flow rate [veh/h]		436	4567	3192
c, Capacity [veh/h]		300	0	1170
d1, Uniform Delay [s]		21.97	0.00	18.42
k, delay calibration		0.17	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00
d2, Incremental Delay [s]		17.06	0.00	16.15
d3, Initial Queue Delay [s]		0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity		0.92	0.00	0.95
d, Delay for Lane Group [s/veh]		39.03	0.00	34.57
Lane Group LOS		D	A	C
Critical Lane Group		Yes	No	Yes
50th-Percentile Queue Length [veh]		2.62	0.00	9.13
50th-Percentile Queue Length [ft]		65.48	0.00	228.15
95th-Percentile Queue Length [veh]		4.71	0.00	14.08
95th-Percentile Queue Length [ft]		117.86	0.00	352.01

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	39.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.57	0.00
Movement LOS				D					A			C	
d_A, Approach Delay [s/veh]	0.00			39.03			0.00			34.57			
Approach LOS	A			D			A			C			
d_I, Intersection Delay [s/veh]	15.20												
Intersection LOS	B												
Intersection V/C	0.983												

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.286

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	180	149	300	385	322	244
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	0.72	0.72	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	34	0	10
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	2	12	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	292	0	443	902	0	505
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	472	149	662	1225	232	693
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	124	39	174	322	61	182
Total Analysis Volume [veh/h]	497	157	697	1289	244	729
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	20	0	50	20	0	50
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	18	18	18	48	68	48	48
g / C, Green / Cycle	0.26	0.26	0.26	0.69	0.97	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.16	0.16	0.11	0.15	0.90	0.19	0.16
s, saturation flow rate [veh/h]	1597	1597	1425	4567	1425	1302	4567
c, Capacity [veh/h]	411	411	366	3131	1307	905	3131
d1, Uniform Delay [s]	22.87	22.87	21.71	4.08	2.52	6.36	4.11
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.44	1.44	0.79	0.16	21.83	0.73	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

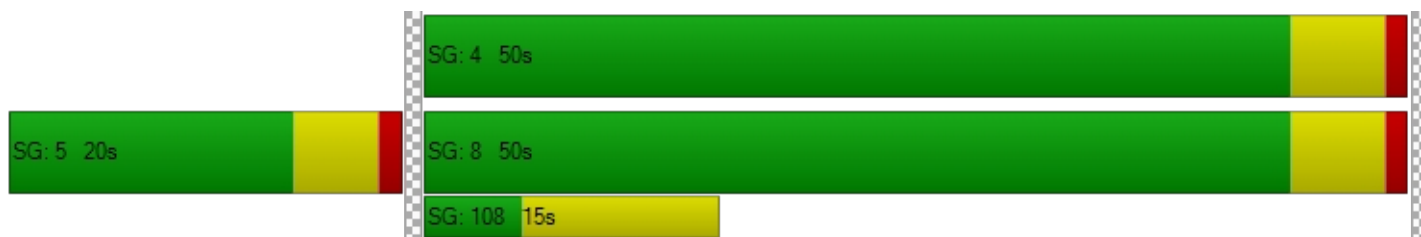
X, volume / capacity	0.61	0.61	0.43	0.22	0.99	0.27	0.23
d, Delay for Lane Group [s/veh]	24.32	24.32	22.50	4.24	24.35	7.10	4.29
Lane Group LOS	C	C	C	A	C	A	A
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.57	3.57	2.12	0.93	7.92	0.78	0.98
50th-Percentile Queue Length [ft]	89.16	89.16	53.01	23.31	198.12	19.53	24.59
95th-Percentile Queue Length [veh]	6.42	6.42	3.82	1.68	12.54	1.41	1.77
95th-Percentile Queue Length [ft]	160.50	160.50	95.42	41.96	313.54	35.16	44.26

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.32	22.50	4.24	24.35	7.10	4.29
Movement LOS	C	C	A	C	A	A
d_A, Approach Delay [s/veh]	23.88		17.29		4.99	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	15.17					
Intersection LOS	B					
Intersection V/C	0.286					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.624

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	156	877	3	8	803	35	56	12	125	5	48	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	7	0	93	30	0	0	3	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	36	0	0	30	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	15	205	0	24	813	0	0	4	53	0	8	51
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	1467	4	128	1989	49	56	19	178	5	56	77
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	386	1	34	523	13	15	5	47	1	15	20
Total Analysis Volume [veh/h]	244	1544	4	135	2094	52	59	20	187	5	59	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	14	21	0	18	25	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	12	34	34	8	30	30	12	12	12	12	12	12
g / C, Green / Cycle	0.20	0.57	0.57	0.13	0.50	0.50	0.20	0.20	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.15	0.25	0.25	0.08	0.35	0.35	0.05	0.01	0.13	0.00	0.04	0.06
s, saturation flow rate [veh/h]	1597	4567	1674	1597	4567	1650	1119	1676	1482	1053	1676	1425
c, Capacity [veh/h]	313	2608	956	203	2296	829	279	338	299	199	338	287
d1, Uniform Delay [s]	22.90	7.34	7.34	24.96	11.33	11.33	23.33	19.36	21.89	25.77	19.82	20.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.24	0.53	1.44	3.69	1.70	4.61	0.37	0.07	2.15	0.05	0.24	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

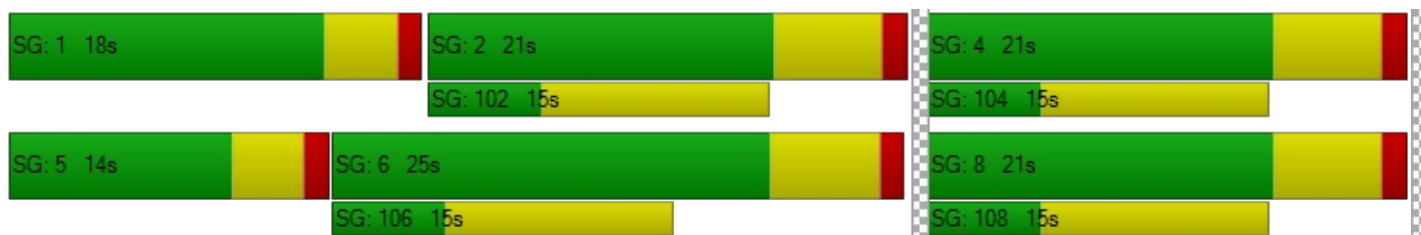
X, volume / capacity	0.78	0.43	0.43	0.66	0.69	0.69	0.21	0.06	0.63	0.03	0.17	0.28
d, Delay for Lane Group [s/veh]	27.15	7.87	8.78	28.65	13.03	15.94	23.70	19.43	24.04	25.82	20.07	20.81
Lane Group LOS	C	A	A	C	B	B	C	B	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	3.40	2.26	2.73	1.86	4.33	5.36	0.71	0.21	2.31	0.06	0.63	0.90
50th-Percentile Queue Length [ft]	84.96	56.48	68.13	46.57	108.17	134.10	17.81	5.22	57.85	1.59	15.82	22.48
95th-Percentile Queue Length [veh]	6.12	4.07	4.91	3.35	7.74	9.16	1.28	0.38	4.16	0.11	1.14	1.62
95th-Percentile Queue Length [ft]	152.93	101.67	122.64	83.82	193.46	229.06	32.06	9.39	104.12	2.86	28.48	40.47

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.15	8.11	8.78	28.65	13.75	15.94	23.70	19.43	24.04	25.82	20.07	20.81
Movement LOS	C	A	A	C	B	B	C	B	C	C	C	C
d_A, Approach Delay [s/veh]	10.70			14.68			23.62			20.68		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	13.81											
Intersection LOS	B											
Intersection V/C	0.624											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	8.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.299

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	30	205	2	3	149	23	12	3	10	1	8	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	10	0	240	50	0	0	91	4	0	16	41
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	29	0	0	82	0	0	28	0	32	59	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	244	2	243	281	23	12	122	14	33	83	43
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	64	1	64	74	6	3	32	4	9	22	11
Total Analysis Volume [veh/h]	44	257	2	256	296	24	13	128	15	35	87	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	45	0	0	45	0	0	15	0	0	15	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	43	43	43	43	43	43	13	13	13	13	13	13
g / C, Green / Cycle	0.72	0.72	0.72	0.72	0.72	0.72	0.22	0.22	0.22	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.08	0.25	0.10	0.10	0.01	0.04	0.04	0.03	0.04	0.04
s, saturation flow rate [veh/h]	950	1676	1672	1004	1676	1633	1127	1676	1616	1116	1676	1493
c, Capacity [veh/h]	756	1201	1198	799	1201	1170	305	363	350	303	363	324
d1, Uniform Delay [s]	3.43	2.61	2.61	4.22	2.67	2.67	21.19	19.23	19.26	21.65	19.18	19.24
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.18	0.18	1.06	0.23	0.24	0.26	1.22	1.30	0.77	1.12	1.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.06	0.11	0.11	0.32	0.13	0.14	0.04	0.20	0.20	0.12	0.19	0.20
d, Delay for Lane Group [s/veh]	3.58	2.79	2.79	5.28	2.90	2.91	21.45	20.45	20.56	22.42	20.30	20.63
Lane Group LOS	A	A	A	A	A	A	C	C	C	C	C	C
Critical Lane Group	No	No	No	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.13	0.25	0.25	0.94	0.33	0.32	0.16	0.85	0.85	0.45	0.79	0.78
50th-Percentile Queue Length [ft]	3.27	6.37	6.37	23.55	8.14	8.02	4.04	21.32	21.24	11.20	19.85	19.56
95th-Percentile Queue Length [veh]	0.24	0.46	0.46	1.70	0.59	0.58	0.29	1.54	1.53	0.81	1.43	1.41
95th-Percentile Queue Length [ft]	5.89	11.47	11.46	42.39	14.65	14.43	7.27	38.38	38.24	20.16	35.73	35.21

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	3.58	2.79	2.79	5.28	2.90	2.91	21.45	20.50	20.56	22.42	20.37	20.63
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	2.91			3.96			20.58			20.87		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.20											
Intersection LOS	A											
Intersection V/C	0.299											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	15.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.070

**Intersection Setup**

Name	Eucalyptus Ave					
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↵↵		↑		↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Eucalyptus Ave					
Base Volume Input [veh/h]	14	1	3	10	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	37	260	71	62	46
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	6	0	0	5	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	60	0	0	70
Total Hourly Volume [veh/h]	26	44	323	81	67	119
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	12	85	21	18	31
Total Analysis Volume [veh/h]	27	46	340	85	71	125
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.07	0.06	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	15.10	10.08	0.00	0.00	8.70	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.23	0.19	0.00	0.00	0.22	0.00
95th-Percentile Queue Length [ft]	5.66	4.86	0.00	0.00	5.47	0.00
d_A, Approach Delay [s/veh]	11.94		0.00		3.15	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.15					
Intersection LOS	C					

**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.974

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	0	0	0	1	0	1
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	14	834	97	126	743	45	4	5	5	185	53	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	77	30	0	0	0	1	0	14	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	6	30	0	0	0	0	0	6	0	36
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	58	428	640	226	0	0	0	0	104	0	160
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	1217	646	875	1259	63	4	6	5	309	53	407
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	320	170	230	331	17	1	2	1	81	14	107
Total Analysis Volume [veh/h]	20	1281	680	921	1325	66	4	6	5	325	56	428
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	10	54	0	34	78	0	0	22	0	0	22	34
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	5	52	52	32	79	79	20	20	20	54
g / C, Green / Cycle	0.04	0.47	0.47	0.29	0.72	0.72	0.18	0.18	0.18	0.49
(v / s)_j Volume / Saturation Flow Rate	0.01	0.28	0.48	0.30	0.22	0.22	0.01	0.13	0.03	0.30
s, saturation flow rate [veh/h]	1597	4567	1425	3101	4567	1625	1539	2443	1676	1425
c, Capacity [veh/h]	67	2159	674	902	3296	1173	321	469	305	671
d1, Uniform Delay [s]	51.14	21.25	29.00	39.00	5.49	5.49	37.16	44.20	38.09	22.01
k, delay calibration	0.11	0.50	0.50	0.12	0.50	0.50	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.48	1.21	37.03	20.09	0.25	0.69	0.06	1.84	0.29	4.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	0.59	1.01	1.02	0.31	0.31	0.05	0.69	0.18	0.64
d, Delay for Lane Group [s/veh]	53.62	22.46	66.03	59.09	5.73	6.18	37.22	46.05	38.38	26.60
Lane Group LOS	D	C	F	F	A	A	D	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.57	7.82	23.25	14.17	2.34	2.65	0.33	4.36	1.31	8.98
50th-Percentile Queue Length [ft]	14.29	195.56	581.20	354.36	58.61	66.27	8.33	109.00	32.64	224.54
95th-Percentile Queue Length [veh]	1.03	12.41	31.39	20.61	4.22	4.77	0.60	7.78	2.35	13.90
95th-Percentile Queue Length [ft]	25.72	310.23	784.63	515.29	105.49	119.29	14.99	194.62	58.75	347.42

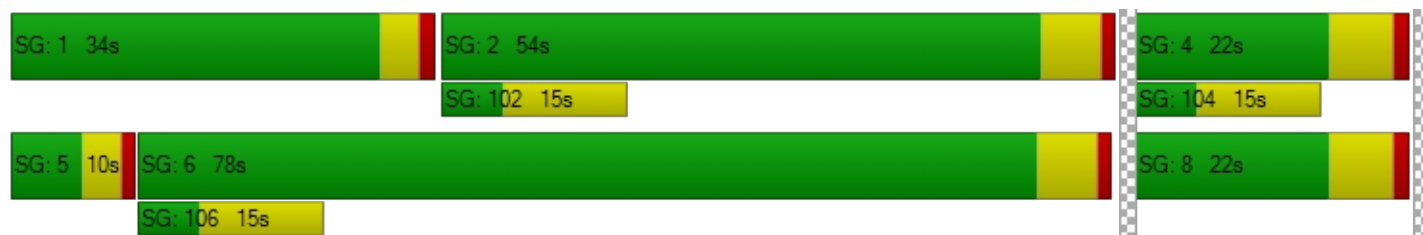


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	53.62	22.46	66.03	59.09	5.84	6.18	37.22	37.22	37.22	46.05	38.38	26.60
Movement LOS	D	C	F	F	A	A	D	D	D	D	D	C
d_A, Approach Delay [s/veh]	37.73			27.06			37.22			35.23		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	32.51											
Intersection LOS	C											
Intersection V/C	0.974											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type: Signalized  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.5  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.597

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Approach	+			T T T			T T T			T T T		
Lane Configuration	+			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Base Volume Input [veh/h]	0	0	0	71	0	84	52	119	0	0	379	177
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	54	0	0	0	108	0	0	21	11
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	36	0	0	42	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	6	0	84	13	26	11	1084	0	0	297	25
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	6	0	209	13	110	63	1347	0	0	739	213
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	55	3	29	17	354	0	0	194	56
Total Analysis Volume [veh/h]	0	6	0	220	14	116	66	1418	0	0	778	224
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	31	0	0	31	0	0	29	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	14	14	14	14	42	42	42	42	42	42
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.69	0.69	0.69	0.69	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.00	0.17	0.01	0.09	0.13	0.42	0.42	0.00	0.31	0.31
s, saturation flow rate [veh/h]	1487	1264	1487	1264	504	1676	1676	301	1676	1549
c, Capacity [veh/h]	419	419	359	305	364	1160	1160	234	1160	1072
d1, Uniform Delay [s]	17.33	21.16	17.43	19.01	9.20	4.93	4.93	0.00	4.13	4.13
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	1.02	0.04	0.78	1.09	2.41	2.41	0.00	1.26	1.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.01	0.52	0.04	0.38	0.18	0.61	0.61	0.00	0.45	0.45
d, Delay for Lane Group [s/veh]	17.35	22.18	17.47	19.79	10.29	7.34	7.34	0.00	5.39	5.49
Lane Group LOS	B	C	B	B	B	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	0.06	2.62	0.14	1.26	0.51	2.96	2.96	0.00	1.75	1.64
50th-Percentile Queue Length [ft]	1.44	65.60	3.41	31.44	12.71	73.89	73.89	0.00	43.64	41.10
95th-Percentile Queue Length [veh]	0.10	4.72	0.25	2.26	0.92	5.32	5.32	0.00	3.14	2.96
95th-Percentile Queue Length [ft]	2.60	118.08	6.13	56.58	22.88	133.00	133.00	0.00	78.56	73.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	17.35	17.35	17.35	22.18	17.47	19.79	10.29	7.34	7.34	0.00	5.42	5.49
Movement LOS	B	B	B	C	B	B	B	A	A	A	A	A
d_A, Approach Delay [s/veh]	17.35			21.20			7.47			5.44		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	8.47											
Intersection LOS	A											
Intersection V/C	0.597											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merill Ave**

Control Type:	Signalized	Delay (sec / veh):	6.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

**Intersection Setup**

Name	Carpenter Ave						Merill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merill Ave					
Base Volume Input [veh/h]	22	1	5	4	0	0	0	179	22	14	490	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	14	0	8	44	119	0	0	23	44
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	3	0	8	7	29	0	0	34	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	39	0	132	0	0	0	0	160	98	362	262	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	1	137	21	0	16	51	487	120	376	809	53
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	0	36	6	0	4	13	128	32	99	213	14
Total Analysis Volume [veh/h]	64	1	144	22	0	17	54	513	126	396	852	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	12	0	0	12	0	0	48	0	0	48	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	10	10	10	10	10	46	46	46	46	46	46
g / C, Green / Cycle	0.16	0.16	0.16	0.16	0.16	0.16	0.77	0.77	0.77	0.77	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.00	0.10	0.02	0.00	0.01	0.10	0.20	0.20	0.56	0.27	0.27
s, saturation flow rate [veh/h]	1251	1676	1425	1114	1676	1425	551	1676	1564	708	1676	1640
c, Capacity [veh/h]	294	276	234	185	276	234	486	1289	1203	612	1289	1261
d1, Uniform Delay [s]	23.45	20.96	23.30	27.16	20.94	21.20	3.74	2.00	2.00	6.30	2.21	2.21
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	0.01	2.61	0.29	0.00	0.13	0.46	0.48	0.52	5.21	0.77	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.22	0.00	0.61	0.12	0.00	0.07	0.11	0.26	0.26	0.65	0.36	0.36
d, Delay for Lane Group [s/veh]	23.82	20.96	25.90	27.45	20.94	21.33	4.20	2.47	2.52	11.51	2.97	3.00
Lane Group LOS	C	C	C	C	C	C	A	A	A	B	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.77	0.01	1.87	0.29	0.00	0.19	0.20	0.38	0.37	2.44	0.60	0.59
50th-Percentile Queue Length [ft]	19.34	0.27	46.66	7.31	0.00	4.77	4.92	9.52	9.23	60.96	14.91	14.80
95th-Percentile Queue Length [veh]	1.39	0.02	3.36	0.53	0.00	0.34	0.35	0.69	0.66	4.39	1.07	1.07
95th-Percentile Queue Length [ft]	34.81	0.49	83.99	13.15	0.00	8.58	8.86	17.13	16.62	109.73	26.85	26.63



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	23.82	20.96	25.90	27.45	20.94	21.33	4.20	2.49	2.52	11.51	2.98	3.00
Movement LOS	C	C	C	C	C	C	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	25.24			24.78			2.63			5.57		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	6.83											
Intersection LOS	A											
Intersection V/C	0.661											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merill Ave**

Control Type:	Signalized	Delay (sec / veh):	36.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Merill Ave			Merill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	70.00	100.00	70.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Merill Ave			Merill Ave		
Base Volume Input [veh/h]	335	1158	55	44	381	138	107	11	65	34	34	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	129	105	0	0	18	61	15	0	24	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	16	0	0	0	0	3	4	0	19	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	313	881	2	85	1363	596	211	50	137	7	105	44
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	719	1889	45	119	1678	768	337	61	245	41	139	109
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	189	497	12	31	442	202	89	16	64	11	37	29
Total Analysis Volume [veh/h]	757	1988	47	125	1766	808	355	64	258	43	146	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.6	5.2	3.2	3.6	5.2	3.2	3.2	4.8	3.6	3.2	4.8	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	23	46	23	10	33	13	13	11	23	23	21	10
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	21	52	59	7	38	51	11	17	6	12	12
g / C, Green / Cycle	0.23	0.57	0.66	0.08	0.42	0.57	0.12	0.19	0.06	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.24	0.44	0.03	0.04	0.39	0.57	0.11	0.02	0.01	0.05	0.08
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	3101	3192	1425
c, Capacity [veh/h]	723	2619	903	254	1928	773	379	617	193	426	190
d1, Uniform Delay [s]	34.50	14.50	6.25	39.51	24.50	20.60	39.16	29.89	40.12	35.41	36.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.44	2.13	0.11	1.47	8.35	45.02	10.97	0.07	0.57	0.48	3.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.05	0.76	0.05	0.49	0.92	1.05	0.94	0.10	0.22	0.34	0.60
d, Delay for Lane Group [s/veh]	63.94	16.63	6.36	40.98	32.85	65.63	50.13	29.96	40.69	35.89	39.84
Lane Group LOS	F	B	A	D	C	F	D	C	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	10.43	9.11	0.31	1.33	12.15	23.34	4.31	0.56	0.45	1.43	2.46
50th-Percentile Queue Length [ft]	260.68	227.70	7.78	33.23	303.73	583.39	107.68	13.89	11.35	35.76	61.39
95th-Percentile Queue Length [veh]	16.11	14.06	0.56	2.39	17.87	32.40	7.71	1.00	0.82	2.57	4.42
95th-Percentile Queue Length [ft]	402.71	351.44	14.00	59.81	446.64	810.12	192.77	25.00	20.43	64.37	110.50

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	63.94	16.63	6.36	40.98	32.85	65.63	50.13	29.96	0.00	40.69	35.89	39.84
Movement LOS	F	B	A	D	C	F	D	C		D	D	D
d_A, Approach Delay [s/veh]	29.28			43.04			47.04			38.06		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	36.89											
Intersection LOS	D											
Intersection V/C	0.769											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	50.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.009

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↔		↔		↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	2	0	1	1
Pocket Length [ft]	100.00	350.00	250.00	100.00	200.00	100.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	651	118	154	311	260	901
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.55	0.55	0.55	0.55	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	65	0	30	13	0	169
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	6	0	11	8	0	11
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	651	258	465	864	350	527
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1080	323	591	1056	610	1608
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	284	85	156	278	161	423
Total Analysis Volume [veh/h]	1137	340	622	1112	642	1693
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	7	1	6	7	4
Auxiliary Signal Groups		2,7				1
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	5.2	3.6	3.2	4.8	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	22	51	17	39	51	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	20	71	15	37	49	49
g / C, Green / Cycle	0.22	0.79	0.17	0.41	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.22	0.21	0.18	0.22	0.19	0.60
s, saturation flow rate [veh/h]	5074	1583	3445	5074	3445	2803
c, Capacity [veh/h]	1128	1203	574	2086	1876	1526
d1, Uniform Delay [s]	35.00	3.30	37.50	19.99	11.48	20.50
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.86	0.59	44.83	0.98	0.11	52.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.01	0.28	1.08	0.53	0.34	1.11
d, Delay for Lane Group [s/veh]	63.86	3.89	82.33	20.97	11.59	73.30
Lane Group LOS	F	A	F	C	B	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	10.58	1.15	9.45	5.38	3.20	24.67
50th-Percentile Queue Length [ft]	264.42	28.81	236.14	134.44	80.11	616.80
95th-Percentile Queue Length [veh]	15.98	2.07	15.03	9.18	5.77	35.50
95th-Percentile Queue Length [ft]	399.56	51.85	375.70	229.52	144.20	887.56

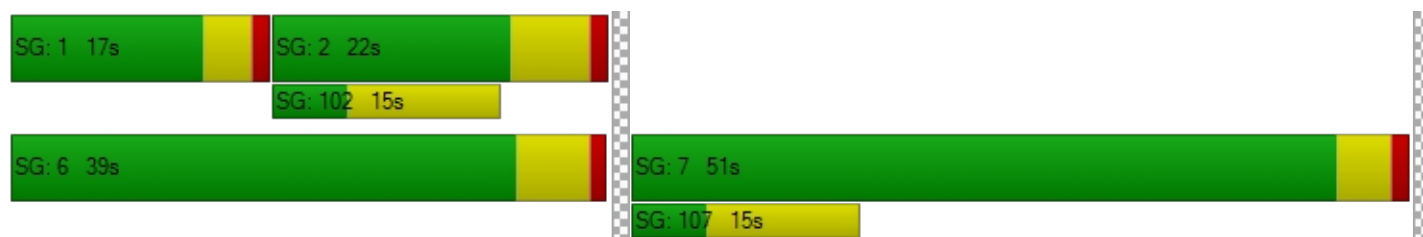


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	63.86	3.89	82.33	20.97	11.59	73.30
Movement LOS	F	A	F	C	B	F
d_A, Approach Delay [s/veh]	50.05		42.98		56.33	
Approach LOS	D		D		E	
d_I, Intersection Delay [s/veh]	50.48					
Intersection LOS	D					
Intersection V/C	1.009					

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	59.7
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.002

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	200.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	165	393	406	300	299	111	163	741	40	258	458	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.47	0.47	0.47	0.47
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	33	0	0	0	0	22	4	21	5	0	114	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	11	0	0	11	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	169	242	0	155	192	196	124	806	73	0	2275	61
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	367	635	406	455	491	329	205	1186	97	121	2615	94
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	97	167	107	120	129	87	54	312	26	32	688	25
Total Analysis Volume [veh/h]	386	668	427	479	517	346	216	1248	102	127	2753	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	17	21	28	20	24	11	11	51	17	28	68	20
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	15	19	45	18	22	33	9	51	68	24	66	86
g / C, Green / Cycle	0.13	0.16	0.37	0.15	0.18	0.28	0.08	0.43	0.57	0.20	0.55	0.72
(v / s)_i Volume / Saturation Flow Rate	0.12	0.15	0.30	0.15	0.11	0.24	0.07	0.27	0.07	0.04	0.60	0.07
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	388	724	503	465	838	366	233	1956	786	609	2511	995
d1, Uniform Delay [s]	52.47	49.76	35.83	51.00	45.10	43.76	55.18	26.98	12.99	40.40	27.01	5.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.43	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.29	19.13	16.16	27.51	3.39	31.82	14.88	0.35	0.07	0.17	45.14	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

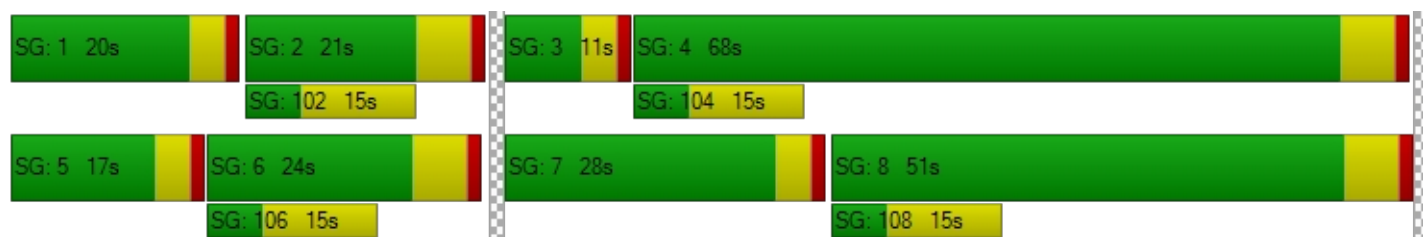
X, volume / capacity	1.00	0.92	0.85	1.03	0.62	0.95	0.93	0.64	0.13	0.21	1.10	0.10
d, Delay for Lane Group [s/veh]	72.76	68.89	51.99	78.51	48.49	75.58	70.06	27.33	13.06	40.57	72.15	5.92
Lane Group LOS	E	E	D	F	D	E	E	C	B	D	F	A
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	6.79	7.73	13.38	8.62	4.90	13.03	3.67	9.05	1.29	1.57	32.18	0.73
50th-Percentile Queue Length [ft]	169.66	193.21	334.49	215.41	122.60	325.79	91.81	226.22	32.22	39.20	804.44	18.18
95th-Percentile Queue Length [veh]	11.06	12.29	19.38	13.61	8.54	18.95	6.61	13.98	2.32	2.82	44.61	1.31
95th-Percentile Queue Length [ft]	276.46	307.18	484.46	340.26	213.39	473.79	165.26	349.55	58.00	70.56	1115.35	32.72

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	72.76	68.89	51.99	78.51	48.49	75.58	70.06	27.33	13.06	40.57	72.15	5.92
Movement LOS	E	E	D	F	D	E	E	C	B	D	F	A
d_A, Approach Delay [s/veh]	65.03			66.19			32.29			68.60		
Approach LOS	E			E			C			E		
d_I, Intersection Delay [s/veh]	59.73											
Intersection LOS	E											
Intersection V/C	1.002											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	259.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.671

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	152	0	393	0	994	478	557	578	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.80	0.80	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	6	0	3	18	0	108	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	2	0	1	10	0	9	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	2451	0	721	378	0	1494	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	152	0	2852	0	1192	631	446	2073	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	40	0	751	0	314	166	117	546	0
Total Analysis Volume [veh/h]	0	0	0	160	0	3002	0	1255	664	469	2182	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0	
Auxiliary Signal Groups													
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-	
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0	
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0	
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0	
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
Split [s]	0	0	0	0	66	0	0	32	0	12	44	0	
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0	
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0	
Rest In Walk					No			No			No		
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	
Minimum Recall					No			No		No	No		
Maximum Recall					No			No		No	No		
Pedestrian Recall					No			No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		64	64	64	30	30	10	42
g / C, Green / Cycle		0.58	0.58	0.58	0.27	0.27	0.09	0.38
(v / s)_i Volume / Saturation Flow Rate		0.10	1.05	1.05	0.27	0.47	0.15	0.48
s, saturation flow rate [veh/h]		1597	1425	1425	4567	1425	3101	4567
c, Capacity [veh/h]		929	829	829	1245	389	282	1744
d1, Uniform Delay [s]		10.69	23.00	23.00	40.00	40.00	50.00	34.00
k, delay calibration		0.11	0.50	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.09	369.47	369.47	27.38	329.64	302.14	118.05
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity		0.17	1.81	1.81	1.01	1.71	1.66	1.25
d, Delay for Lane Group [s/veh]		10.78	392.47	392.47	67.38	369.64	352.14	152.05
Lane Group LOS		B	F	F	F	F	F	F
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		1.70	103.81	103.81	13.94	45.68	15.62	33.68
50th-Percentile Queue Length [ft]		42.53	2595.18	2595.18	348.44	1141.95	390.45	842.02
95th-Percentile Queue Length [veh]		3.06	167.57	167.57	20.15	71.99	25.61	49.74
95th-Percentile Queue Length [ft]		76.55	4189.37	4189.37	503.83	1799.75	640.35	1243.58

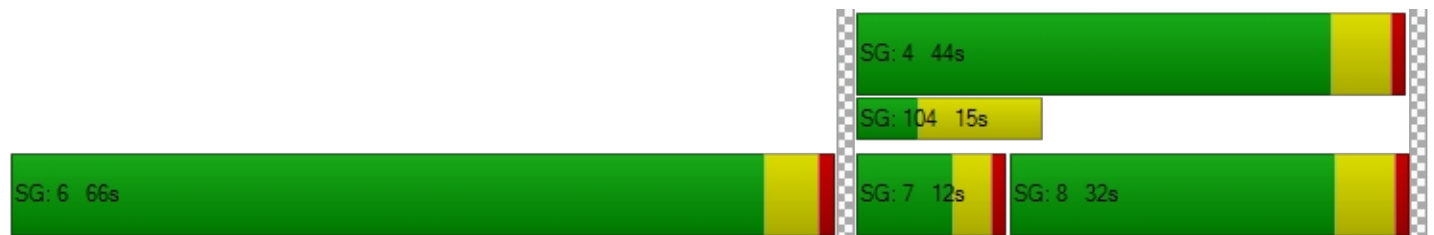


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	10.78	392.47	392.47	0.00	67.38	369.64	352.14	152.05	0.00
Movement LOS				B	F	F		F	F	F	F	
d_A, Approach Delay [s/veh]	0.00			373.16			171.97			187.45		
Approach LOS	A			F			F			F		
d_I, Intersection Delay [s/veh]	259.55											
Intersection LOS	F											
Intersection V/C	1.671											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	169.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.307

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↑↻						↵↑↑			↑↑↻		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	208	0	295	0	0	0	701	441	0	0	915	312
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	1.00	1.00	0.80	0.80
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	98	0	0	0	0	0	2	1	0	0	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	9	0	0	0	0	0	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1456	0	0	0	0	0	576	400	0	0	718	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1771	0	295	0	0	0	1140	754	0	0	1460	250
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	466	0	78	0	0	0	300	198	0	0	384	66
Total Analysis Volume [veh/h]	1864	0	311	0	0	0	1200	794	0	0	1537	263
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	39	0	0	0	0	27	51	0	0	24	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	37	37	37		25	49	22	22
g / C, Green / Cycle	0.41	0.41	0.41		0.28	0.54	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.58	0.58	0.22		0.39	0.17	0.34	0.18
s, saturation flow rate [veh/h]	1597	1597	1425		3101	4567	4567	1425
c, Capacity [veh/h]	656	656	586		861	2486	1116	348
d1, Uniform Delay [s]	26.50	26.50	19.96		32.50	11.30	34.00	31.50
k, delay calibration	0.50	0.50	0.50		0.14	0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	197.80	197.80	3.42		179.05	0.07	170.85	3.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

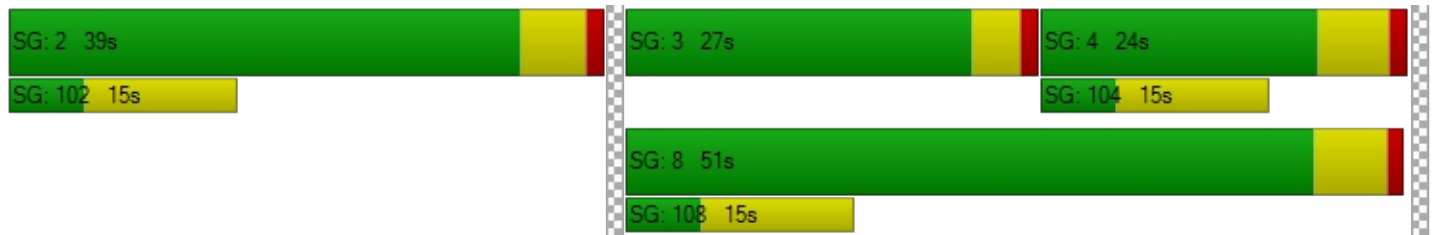
X, volume / capacity	1.42	1.42	0.53		1.39	0.32	1.38	0.76
d, Delay for Lane Group [s/veh]	224.30	224.30	23.38		211.55	11.38	204.85	35.29
Lane Group LOS	F	F	C		F	B	F	D
Critical Lane Group	Yes	No	No		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	48.76	48.76	5.09		30.19	2.60	25.32	5.38
50th-Percentile Queue Length [ft]	1218.88	1218.88	127.14		754.87	64.91	632.96	134.55
95th-Percentile Queue Length [veh]	74.16	74.16	8.78		46.49	4.67	39.26	9.19
95th-Percentile Queue Length [ft]	1854.12	1854.12	219.61		1162.15	116.83	981.48	229.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	224.30	224.30	23.38	0.00	0.00	0.00	211.55	11.38	0.00	0.00	204.85	35.29
Movement LOS	F	F	C				F	B			F	D
d_A, Approach Delay [s/veh]	195.57			0.00			131.84			180.08		
Approach LOS	F			A			F			F		
d_I, Intersection Delay [s/veh]	169.61											
Intersection LOS	F											
Intersection V/C	1.307											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	29.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	52	628	17	159	528	235	62	173	22	19	703	239
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	77	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	6	0	0	6	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	121	144	305	49	8	50	113	0	38	32	68
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	1077	168	526	803	335	112	286	22	57	735	307
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	283	44	138	211	88	29	75	6	15	193	81
Total Analysis Volume [veh/h]	76	1134	177	554	845	353	118	301	23	60	774	323
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	26	0	19	35	10	10	25	0	10	25	19
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	24	24	17	35	45	8	25	25	6	23	42
g / C, Green / Cycle	0.08	0.30	0.30	0.21	0.43	0.56	0.10	0.31	0.31	0.07	0.29	0.53
(v / s)_i Volume / Saturation Flow Rate	0.03	0.28	0.14	0.20	0.21	0.28	0.04	0.11	0.02	0.02	0.27	0.26
s, saturation flow rate [veh/h]	2750	4050	1264	2750	4050	1264	2750	2831	1264	2750	2831	1264
c, Capacity [veh/h]	219	1215	379	584	1753	670	275	884	395	207	814	629
d1, Uniform Delay [s]	34.83	27.22	22.79	31.06	16.27	12.25	33.85	21.17	19.27	34.97	27.95	13.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.26	0.11	0.11	0.11	0.11	0.11	0.22
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.94	14.09	4.09	8.81	0.95	1.56	1.06	0.23	0.06	0.77	7.02	1.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.35	0.93	0.47	0.95	0.48	0.53	0.43	0.34	0.06	0.29	0.95	0.51
d, Delay for Lane Group [s/veh]	35.77	41.31	26.88	39.87	17.22	13.81	34.91	21.39	19.33	35.74	34.97	14.87
Lane Group LOS	D	D	C	D	B	B	C	C	B	D	C	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.70	8.00	2.95	5.78	3.61	3.98	1.07	2.04	0.29	0.55	7.45	3.62
50th-Percentile Queue Length [ft]	17.45	199.99	73.63	144.62	90.24	99.61	26.69	50.90	7.15	13.76	186.23	90.61
95th-Percentile Queue Length [veh]	1.26	12.64	5.30	9.73	6.50	7.17	1.92	3.67	0.51	0.99	11.93	6.52
95th-Percentile Queue Length [ft]	31.40	315.96	132.53	243.24	162.43	179.31	48.04	91.63	12.87	24.77	298.13	163.11



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	35.77	41.31	26.88	39.87	17.22	13.81	34.91	21.39	19.33	35.74	34.97	14.87
Movement LOS	D	D	C	D	B	B	C	C	B	D	C	B
d_A, Approach Delay [s/veh]	39.17			23.70			24.89			29.40		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	29.73											
Intersection LOS	C											
Intersection V/C	0.798											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type: Signalized  
 Analysis Method: HCM 2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 21.0  
 Level Of Service: C  
 Volume to Capacity (v/c): 0.636

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	2	2	0	1	2	0	0	2	0	1
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	23	493	478	56	542	19	2	151	18	893	201	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	61	0	0	11	3	16	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	4	2	2	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	203	153	0	81	0	0	0	0	35	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	953	817	78	849	31	20	151	18	928	201	23
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	251	215	21	223	8	5	40	5	244	53	6
Total Analysis Volume [veh/h]	34	1003	860	82	894	33	21	159	19	977	212	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	28	10	21	0	10	21	0	28	39	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	5	31	59	6	32	32	4	9	26	31
g / C, Green / Cycle	0.06	0.39	0.74	0.08	0.41	0.41	0.05	0.11	0.33	0.38
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.35	0.03	0.15	0.02	0.01	0.05	0.32	0.05
s, saturation flow rate [veh/h]	1573	6001	2486	3056	6001	1404	3056	3146	3056	4501
c, Capacity [veh/h]	96	2315	1761	245	2429	569	156	343	993	1724
d1, Uniform Delay [s]	36.05	18.12	5.21	34.79	16.65	14.51	36.26	33.43	26.79	15.98
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.21	0.59	0.97	0.80	0.43	0.19	0.39	0.97	10.01	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

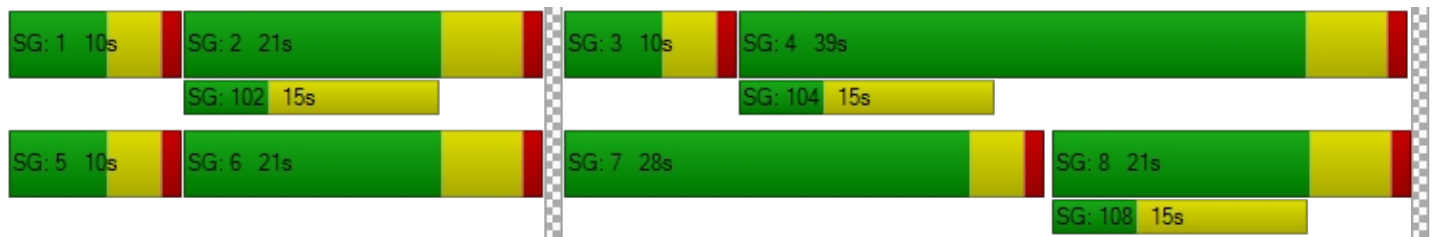
X, volume / capacity	0.35	0.43	0.49	0.34	0.37	0.06	0.13	0.46	0.98	0.12
d, Delay for Lane Group [s/veh]	38.26	18.71	6.18	35.59	17.08	14.70	36.64	34.40	36.80	16.01
Lane Group LOS	D	B	A	D	B	B	D	C	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.67	3.20	2.30	0.75	2.67	0.36	0.20	1.43	9.76	0.77
50th-Percentile Queue Length [ft]	16.70	79.90	57.43	18.70	66.64	9.11	4.90	35.63	243.89	19.37
95th-Percentile Queue Length [veh]	1.20	5.75	4.13	1.35	4.80	0.66	0.35	2.57	14.88	1.39
95th-Percentile Queue Length [ft]	30.07	143.83	103.37	33.66	119.95	16.40	8.82	64.14	371.95	34.87

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	38.26	18.71	6.18	35.59	17.08	14.70	36.64	34.40	0.00	36.80	16.01	0.00
Movement LOS	D	B	A	D	B	B	D	C		D	B	
d_A, Approach Delay [s/veh]	13.38			18.50			34.67			33.10		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.97											
Intersection LOS	C											
Intersection V/C	0.636											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.570

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	311	666	199	94	376	423	268	549	140	205	660	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.55	0.55	0.55	0.55	0.55	0.55	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	55	0	0	10	3	10	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	5	0	0	6	2	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	749	0	19	850	28	52	0	0	0	0	35
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	1175	109	71	1073	266	331	549	140	205	660	131
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	309	29	19	282	70	87	144	37	54	174	34
Total Analysis Volume [veh/h]	180	1237	115	75	1129	280	348	578	147	216	695	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	3.6	3.6	5.2	3.6	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	25	11	10	22	13	13	24	0	11	22	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	28	39	6	27	40	11	19	19	8	16	16
g / C, Green / Cycle	0.11	0.40	0.55	0.09	0.39	0.58	0.16	0.27	0.27	0.12	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.27	0.08	0.02	0.25	0.20	0.11	0.13	0.10	0.07	0.15	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	335	1845	731	287	1775	765	487	1239	387	365	1059	331
d1, Uniform Delay [s]	29.56	17.05	9.02	29.53	17.38	9.33	28.01	21.28	20.72	29.28	24.35	22.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.34	1.96	0.46	0.48	1.75	0.29	1.96	0.27	0.62	1.53	0.70	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.54	0.67	0.16	0.26	0.64	0.37	0.71	0.47	0.38	0.59	0.66	0.42
d, Delay for Lane Group [s/veh]	30.91	19.01	9.48	30.01	19.13	9.62	29.97	21.55	21.34	30.81	25.05	23.70
Lane Group LOS	C	B	A	C	B	A	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.40	4.99	0.86	0.57	4.55	2.03	2.69	2.42	1.84	1.68	3.24	1.85
50th-Percentile Queue Length [ft]	35.05	124.82	21.46	14.23	113.78	50.67	67.27	60.54	46.06	42.05	80.99	46.26
95th-Percentile Queue Length [veh]	2.52	8.66	1.54	1.02	8.05	3.65	4.84	4.36	3.32	3.03	5.83	3.33
95th-Percentile Queue Length [ft]	63.10	216.44	38.62	25.61	201.24	91.21	121.09	108.98	82.90	75.68	145.77	83.27

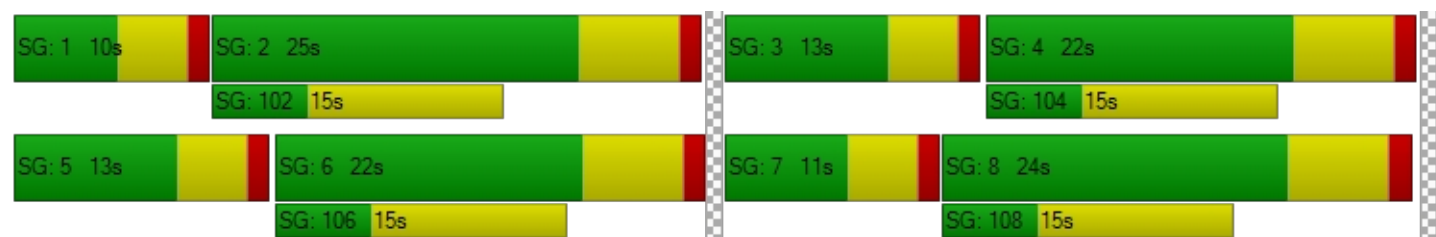


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.91	19.01	9.48	30.01	19.13	9.62	29.97	21.55	21.34	30.81	25.05	23.70
Movement LOS	C	B	A	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.70			17.89			24.25			26.06		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	21.42											
Intersection LOS	C											
Intersection V/C	0.570											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 46: Hellman Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	8.7
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.385

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐⇐		⇐⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	375	0	0	272
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	36	146	63	66	205
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	7	6	0	7	5
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	375	0	0	272
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	43	902	63	73	754
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	11	237	17	19	198
Total Analysis Volume [veh/h]	12	45	949	66	77	794
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.8	0.0	4.8	0.0	0.0	4.8
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	21	0	39	0	0	39
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	37	37	37	37
g / C, Green / Cycle	0.32	0.32	0.62	0.62	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.01	0.04	0.34	0.35	0.17	0.28
s, saturation flow rate [veh/h]	1416	1264	1487	1454	442	2831
c, Capacity [veh/h]	448	400	917	896	294	1746
d1, Uniform Delay [s]	14.13	14.53	6.69	6.77	13.33	6.13
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	0.57	2.40	2.59	2.16	0.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

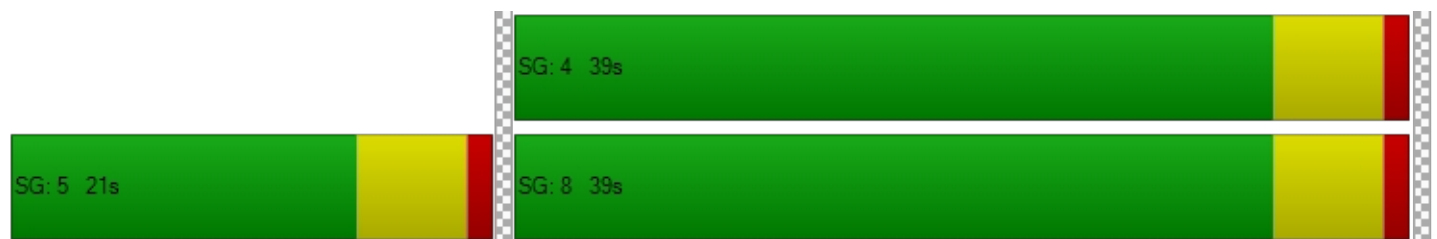
X, volume / capacity	0.03	0.11	0.55	0.57	0.26	0.45
d, Delay for Lane Group [s/veh]	14.24	15.09	9.10	9.36	15.48	6.98
Lane Group LOS	B	B	A	A	B	A
Critical Lane Group	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.11	0.44	2.96	3.02	0.81	1.89
50th-Percentile Queue Length [ft]	2.78	10.97	74.08	75.58	20.16	47.28
95th-Percentile Queue Length [veh]	0.20	0.79	5.33	5.44	1.45	3.40
95th-Percentile Queue Length [ft]	5.00	19.75	133.34	136.04	36.28	85.11

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	14.24	15.09	9.22	9.36	15.48	6.98
Movement LOS	B	B	A	A	B	A
d_A, Approach Delay [s/veh]	14.91		9.23		7.73	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	8.73					
Intersection LOS	A					
Intersection V/C	0.385					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 47: Hellman Ave/Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	3.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

**Intersection Setup**

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	188	510	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	11	59	62	78	53
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	9	19	17	17	17	8
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	292	624	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	30	76	559	1229	61
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	8	20	147	323	16
Total Analysis Volume [veh/h]	21	32	80	588	1294	64
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.8	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	16	0	0	84	84	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C	C
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	1.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	8	88	88	88	88
g / C, Green / Cycle	0.08	0.08	0.88	0.88	0.88	0.88
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.25	0.21	0.46	0.46
s, saturation flow rate [veh/h]	1416	1264	319	2831	1487	1463
c, Capacity [veh/h]	111	99	313	2496	1311	1289
d1, Uniform Delay [s]	43.10	43.56	3.99	0.89	1.29	1.31
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.81	1.85	1.97	0.22	1.47	1.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.19	0.32	0.26	0.24	0.52	0.53
d, Delay for Lane Group [s/veh]	43.91	45.41	5.96	1.11	2.76	2.85
Lane Group LOS	D	D	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.50	0.78	0.54	0.08	0.53	0.55
50th-Percentile Queue Length [ft]	12.50	19.57	13.61	1.93	13.35	13.81
95th-Percentile Queue Length [veh]	0.90	1.41	0.98	0.14	0.96	0.99
95th-Percentile Queue Length [ft]	22.51	35.23	24.50	3.47	24.02	24.85



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.91	45.41	5.96	1.11	2.80	2.85
Movement LOS	D	D	A	A	A	A
d_A, Approach Delay [s/veh]	44.82		1.69		2.81	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	3.52					
Intersection LOS	A					
Intersection V/C	0.490					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 66: Archibald Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.899

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	0	1326	27	14	650	0	0	0	0	10	0	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	105	15	0	0	61	304	61	0	18	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	3	12	13	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	201	1071	23	88	1569	38	38	54	283	45	33	90
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	306	2124	44	99	2140	354	112	54	301	55	33	140
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	559	12	26	563	93	29	14	79	14	9	37
Total Analysis Volume [veh/h]	322	2236	46	104	2253	373	118	57	317	58	35	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	0	5	0
Maximum Green [s]	5	30	0	30	30	0	30	30	5	0	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	3.6	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	13	53	0	15	55	0	11	32	13	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	Yes	No		No	No		No	No			No	
Maximum Recall	No	No		No	No		No	No			No	
Pedestrian Recall	No	No		No	No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	11	60	60	7	57	57	9	26	26	15	15	15
g / C, Green / Cycle	0.11	0.60	0.60	0.07	0.57	0.57	0.09	0.26	0.26	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.10	0.47	0.47	0.03	0.54	0.57	0.07	0.03	0.22	0.05	0.02	0.10
s, saturation flow rate [veh/h]	3101	3192	1659	3101	3192	1561	1597	1676	1425	1207	1676	1425
c, Capacity [veh/h]	341	1924	1000	230	1809	885	144	441	375	215	257	218
d1, Uniform Delay [s]	44.19	14.87	14.96	44.35	20.52	21.66	44.71	28.10	34.91	40.81	36.62	39.98
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.26	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.77	3.19	6.14	1.39	13.23	32.71	10.94	0.13	11.71	0.67	0.24	3.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.94	0.78	0.78	0.45	0.96	1.01	0.82	0.13	0.85	0.27	0.14	0.67
d, Delay for Lane Group [s/veh]	56.96	18.07	21.09	45.74	33.75	54.37	55.65	28.23	46.62	41.48	36.86	43.56
Lane Group LOS	E	B	C	D	C	F	E	C	D	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	4.45	11.70	13.12	1.25	19.79	25.80	3.23	1.03	8.20	1.33	0.74	3.53
50th-Percentile Queue Length [ft]	111.17	292.53	327.97	31.23	494.71	645.11	80.81	25.67	205.11	33.21	18.47	88.15
95th-Percentile Queue Length [veh]	7.91	17.31	19.06	2.25	27.08	34.42	5.82	1.85	12.90	2.39	1.33	6.35
95th-Percentile Queue Length [ft]	197.63	432.78	476.47	56.22	677.10	860.46	145.45	46.21	322.55	59.78	33.24	158.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	56.96	19.06	21.09	45.74	38.51	54.37	55.65	28.23	46.62	41.48	36.86	43.56
Movement LOS	E	B	C	D	D	D	E	C	D	D	D	D
d_A, Approach Delay [s/veh]	23.79			40.96			46.66			42.08		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	34.09											
Intersection LOS	C											
Intersection V/C	0.899											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 1: Euclid Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00	18.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	160.00	100.00	100.00	160.00	100.00	100.00	170.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	223	895	174	95	956	99	125	426	103	157	435	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.20	1.20	1.20	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	18	0	0	6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	4	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	61	0	0	34	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	268	1157	209	114	1191	119	125	426	103	157	435	89
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	304	55	30	313	31	33	112	27	41	114	23
Total Analysis Volume [veh/h]	282	1218	220	120	1254	125	132	448	108	165	458	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	32	0	63	21	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	11	41	41	0	28	28	25	16	16	8	16	16
g / C, Green / Cycle	0.16	0.58	0.58	0.00	0.40	0.40	0.36	0.23	0.23	0.11	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.18	0.30	0.30	1.07	0.28	0.28	0.13	0.17	0.17	0.10	0.16	0.16
s, saturation flow rate [veh/h]	1597	3192	1549	112	3192	1666	1028	1676	1566	1592	1744	1642
c, Capacity [veh/h]	251	1853	899	103	1260	658	384	390	364	307	406	383
d1, Uniform Delay [s]	29.50	8.84	8.85	35.00	17.90	17.90	18.96	24.87	24.90	18.45	24.58	24.60
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	67.41	1.06	2.18	140.43	3.56	6.66	0.53	2.72	2.97	1.46	2.18	2.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.12	0.52	0.52	1.17	0.72	0.72	0.34	0.74	0.74	0.54	0.70	0.70
d, Delay for Lane Group [s/veh]	96.91	9.89	11.02	175.43	21.46	24.56	19.49	27.59	27.87	19.91	26.76	26.94
Lane Group LOS	F	A	B	F	C	C	B	C	C	B	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	8.58	3.61	3.79	6.01	5.95	6.77	1.50	4.30	4.07	1.97	4.17	3.96
50th-Percentile Queue Length [ft]	214.58	90.16	94.76	150.30	148.65	169.32	37.51	107.56	101.72	49.27	104.22	99.03
95th-Percentile Queue Length [veh]	14.08	6.49	6.82	10.03	9.95	11.04	2.70	7.70	7.32	3.55	7.50	7.13
95th-Percentile Queue Length [ft]	351.98	162.28	170.57	250.84	248.63	276.02	67.52	192.60	183.10	88.69	187.60	178.26

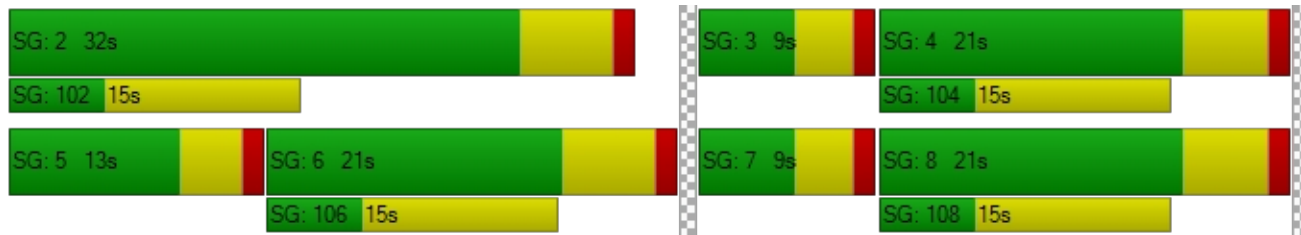


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	96.91	10.13	11.02	175.43	22.32	24.56	19.49	27.69	27.87	19.91	26.83	26.94
Movement LOS	F	B	B	F	C	C	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	24.47			34.76			26.15			25.25		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.18											
Intersection LOS	C											
Intersection V/C	0.715											

**Sequence**

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Grove Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	23.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

**Intersection Setup**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	20.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	125.00	100.00	100.00	125.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Philadelphia St			Philadelphia St		
Base Volume Input [veh/h]	181	681	76	104	1078	112	117	245	268	242	338	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.28	1.28	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	44	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	49	0	0	44	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	233	965	97	133	1438	143	117	245	268	242	338	86
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	254	26	35	378	38	31	64	71	64	89	23
Total Analysis Volume [veh/h]	245	1016	102	140	1514	151	123	258	282	255	356	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	27	0	23	40	0	9	21	0	9	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	8	39	39	7	38	38	28	19	19	28	19	19
g / C, Green / Cycle	0.10	0.49	0.49	0.09	0.48	0.48	0.35	0.24	0.24	0.35	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.08	0.23	0.23	0.05	0.35	0.35	0.12	0.15	0.19	0.25	0.14	0.14
s, saturation flow rate [veh/h]	3101	3192	1599	3101	3192	1600	1060	1676	1482	1010	1676	1625
c, Capacity [veh/h]	310	1553	778	275	1516	760	380	398	352	325	398	386
d1, Uniform Delay [s]	35.18	13.76	13.76	34.80	16.89	16.91	21.45	27.49	28.72	27.83	26.89	26.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.21	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.51	1.06	2.11	1.46	3.14	6.18	0.49	1.78	4.25	7.91	1.28	1.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	0.48	0.48	0.51	0.73	0.73	0.32	0.65	0.80	0.79	0.57	0.57
d, Delay for Lane Group [s/veh]	39.69	14.83	15.88	36.26	20.03	23.09	21.94	29.26	32.97	35.74	28.17	28.24
Lane Group LOS	D	B	B	D	C	C	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	2.38	4.03	4.27	1.28	7.54	8.22	1.66	4.35	5.15	4.37	3.70	3.62
50th-Percentile Queue Length [ft]	59.50	100.85	106.76	32.01	188.44	205.60	41.44	108.64	128.86	109.26	92.56	90.41
95th-Percentile Queue Length [veh]	4.28	7.26	7.66	2.30	12.04	12.93	2.98	7.76	8.88	7.80	6.66	6.51
95th-Percentile Queue Length [ft]	107.11	181.52	191.48	57.62	301.01	323.17	74.60	194.11	221.94	194.97	166.62	162.75

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.69	15.11	15.88	36.26	20.85	23.09	21.94	29.26	32.97	35.74	28.19	28.24
Movement LOS	D	B	B	D	C	C	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	19.58			22.23			29.48			30.94		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	23.84											
Intersection LOS	C											
Intersection V/C	0.730											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Archibald Ave / Philadelphia St**

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.405

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	200.00	100.00	660.00	235.00	100.00	195.00	145.00	100.00	145.00	155.00	100.00	155.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	142	342	62	38	650	35	48	316	340	259	170	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	25	6	0	8	0	0	0	1	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	2	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	319	0	0	498	0	0	0	11	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	671	65	36	1126	33	48	316	352	261	170	18
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	177	17	9	296	9	13	83	93	69	45	5
Total Analysis Volume [veh/h]	158	706	68	38	1185	35	51	333	371	275	179	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	11	21	12	16	26	10	10	21	11	12	23	16
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	9	35	46	5	31	38	5	13	24	9	17	23
g / C, Green / Cycle	0.13	0.50	0.66	0.07	0.44	0.55	0.08	0.18	0.34	0.13	0.24	0.34
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.05	0.01	0.26	0.02	0.02	0.10	0.26	0.09	0.06	0.01
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	1425	3101	3192	1425
c, Capacity [veh/h]	399	2290	898	216	2022	736	238	584	440	407	759	434
d1, Uniform Delay [s]	28.01	10.29	5.03	30.66	14.68	8.39	30.34	26.08	22.61	28.98	21.54	17.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.16	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.64	0.35	0.16	0.38	1.25	0.03	0.45	0.88	6.54	1.96	0.16	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.40	0.31	0.08	0.18	0.59	0.05	0.21	0.57	0.84	0.68	0.24	0.04
d, Delay for Lane Group [s/veh]	28.64	10.64	5.20	31.05	15.93	8.41	30.79	26.95	29.15	30.94	21.70	17.19
Lane Group LOS	C	B	A	C	B	A	C	C	C	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.17	1.84	0.32	0.30	4.23	0.22	0.39	2.40	5.87	2.16	1.11	0.20
50th-Percentile Queue Length [ft]	29.20	45.95	7.88	7.39	105.74	5.57	9.84	60.12	146.75	53.90	27.65	5.03
95th-Percentile Queue Length [veh]	2.10	3.31	0.57	0.53	7.60	0.40	0.71	4.33	9.84	3.88	1.99	0.36
95th-Percentile Queue Length [ft]	52.56	82.71	14.18	13.29	190.06	10.02	17.72	108.22	246.09	97.02	49.77	9.06



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.64	10.64	5.20	31.05	15.93	8.41	30.79	26.95	29.15	30.94	21.70	17.19
Movement LOS	C	B	A	C	B	A	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	13.29			16.18			28.29			26.89		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.55											
Intersection LOS	B											
Intersection V/C	0.405											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: SR60 WB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	0	0	0	0	0	1	0	1
Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	400.00	100.00	400.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	212	982	0	0	856	491	0	0	0	432	0	334
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.20	1.20	1.00	1.00	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	18	0	0	6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	15	4	0	0	4	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	356	72	0	0	37	0	0	0	0	56	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	635	1272	0	0	1074	589	0	0	0	488	0	334
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	167	335	0	0	283	155	0	0	0	128	0	88
Total Analysis Volume [veh/h]	668	1339	0	0	1131	620	0	0	0	514	0	352
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	15	45	0	0	30	0	0	0	0	0	15	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		L	C	R
C, Cycle Length [s]	60	60	60	60		60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00	1.00
g_i, Effective Green Time [s]	13	43	28	28		13	13	13
g / C, Green / Cycle	0.22	0.72	0.47	0.47		0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.22	0.29	0.35	0.44		0.18	0.19	0.20
s, saturation flow rate [veh/h]	3101	4567	3192	1425		1597	1551	1425
c, Capacity [veh/h]	672	3273	1490	665		346	336	309
d1, Uniform Delay [s]	23.46	3.41	13.22	15.11		22.57	22.66	22.92
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	14.87	0.38	3.69	21.75		5.90	6.72	10.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00

**Lane Group Results**

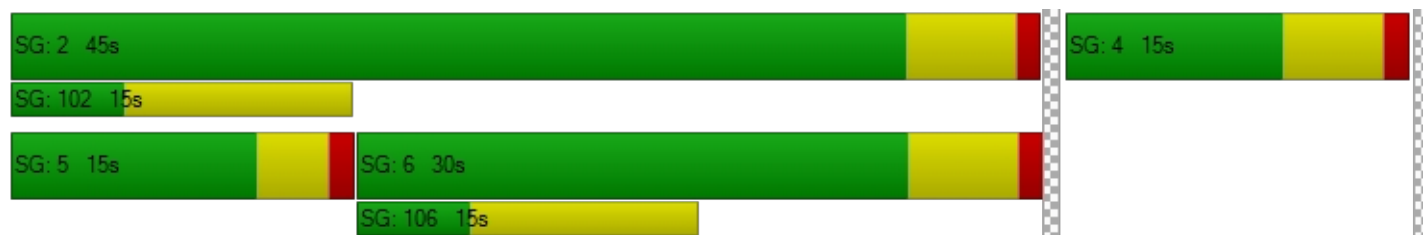
X, volume / capacity	0.99	0.41	0.76	0.93		0.85	0.87	0.91
d, Delay for Lane Group [s/veh]	38.33	3.79	16.90	36.86		28.47	29.37	33.04
Lane Group LOS	D	A	B	D		C	C	C
Critical Lane Group	Yes	No	No	Yes		No	No	Yes
50th-Percentile Queue Length [veh]	5.52	0.99	5.62	10.11		4.07	4.11	4.26
50th-Percentile Queue Length [ft]	138.11	24.74	140.61	252.77		101.85	102.66	106.62
95th-Percentile Queue Length [veh]	9.38	1.78	9.51	15.33		7.33	7.39	7.65
95th-Percentile Queue Length [ft]	234.47	44.53	237.84	383.14		183.33	184.79	191.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	38.33	3.79	0.00	0.00	16.90	36.86	0.00	0.00	0.00	28.86	29.37	32.36
Movement LOS	D	A			B	D				C	C	C
d_A, Approach Delay [s/veh]	15.28			23.97			0.00			30.25		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	21.38											
Intersection LOS	C											
Intersection V/C	0.848											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SR60 EB Ramp / Euclid Ave**

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.954

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T			TT			T+					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	275.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	843	439	286	1007	0	347	2	234	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.20	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	6	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	4	0	0	0	19	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	428	277	0	93	0	0	0	104	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1487	804	343	1311	0	347	2	359	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	391	212	90	345	0	91	1	94	0	0	0
Total Analysis Volume [veh/h]	0	1565	846	361	1380	0	365	2	378	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	40	0	10	50	0	0	20	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C	
C, Cycle Length [s]	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	38	38	8	48	18	18	
g / C, Green / Cycle	0.54	0.54	0.11	0.69	0.26	0.26	
(v / s)_i Volume / Saturation Flow Rate	0.49	0.57	0.12	0.30	0.23	0.27	
s, saturation flow rate [veh/h]	3192	1482	3101	4567	1597	1426	
c, Capacity [veh/h]	1733	805	354	3131	411	367	
d1, Uniform Delay [s]	14.35	16.00	31.00	4.95	25.04	26.00	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.17	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	8.16	46.15	27.04	0.45	6.69	37.45	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.90	1.05	1.02	0.44	0.89	1.04	
d, Delay for Lane Group [s/veh]	22.51	62.15	58.04	5.41	31.73	63.45	
Lane Group LOS	C	F	F	A	C	F	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh]	10.49	20.08	4.11	1.96	6.02	9.30	
50th-Percentile Queue Length [ft]	262.15	502.05	102.70	48.98	150.47	232.44	
95th-Percentile Queue Length [veh]	15.80	28.52	7.39	3.53	10.04	14.58	
95th-Percentile Queue Length [ft]	394.91	712.96	184.87	88.17	251.06	364.46	



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	22.51	62.15	58.04	5.41	0.00	31.73	63.45	63.45	0.00	0.00	0.00
Movement LOS		C	F	F	A		C	E	F			
d_A, Approach Delay [s/veh]	36.42			16.32			47.91			0.00		
Approach LOS	D			B			D			A		
d_I, Intersection Delay [s/veh]	31.02											
Intersection LOS	C											
Intersection V/C	0.954											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: SR60 WB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	40.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.035

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵						↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	240.00
Speed [mph]	45.00			45.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	160	807	0	0	922	680	0	0	0	205	2	306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.00	1.00	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	35	45	0	0	14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	12	49	0	0	44	0	0	0	0	3	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	252	1127	0	0	1238	870	0	0	0	208	2	306
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	297	0	0	326	229	0	0	0	55	1	81
Total Analysis Volume [veh/h]	265	1186	0	0	1303	916	0	0	0	219	2	322
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	13	54	0	0	41	0	0	0	0	0	16	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R		C	R
C, Cycle Length [s]	70	70	70	70		70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	11	52	39	39		14	14
g / C, Green / Cycle	0.16	0.74	0.56	0.56		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.17	0.37	0.41	0.64		0.14	0.23
s, saturation flow rate [veh/h]	1597	3192	3192	1425		1597	1425
c, Capacity [veh/h]	251	2371	1778	794		319	285
d1, Uniform Delay [s]	29.50	3.68	11.60	15.50		26.00	28.00
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	42.59	0.76	2.71	83.32		2.68	68.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	1.06	0.50	0.73	1.15		0.69	1.13
d, Delay for Lane Group [s/veh]	72.09	4.44	14.31	98.82		28.68	96.54
Lane Group LOS	F	A	B	F		C	F
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	6.79	1.60	6.23	27.42		3.37	9.78
50th-Percentile Queue Length [ft]	169.64	40.08	155.63	685.52		84.29	244.47
95th-Percentile Queue Length [veh]	11.32	2.89	10.32	40.05		6.07	15.80
95th-Percentile Queue Length [ft]	283.05	72.15	257.93	1001.31		151.72	394.89

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	72.09	4.44	0.00	0.00	14.31	98.82	0.00	0.00	0.00	28.68	28.68	96.54
Movement LOS	F	A			B	F				C	C	F
d_A, Approach Delay [s/veh]	16.79			49.20			0.00			68.92		
Approach LOS	B			D			A			E		
d_I, Intersection Delay [s/veh]	40.58											
Intersection LOS	D											
Intersection V/C	1.035											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 7: SR60 EB Ramp / Grove Ave**

Control Type:	Signalized	Delay (sec / veh):	57.0
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.001

**Intersection Setup**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	18.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	120.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Grove Ave			Grove Ave			Ramp			Ramp		
Base Volume Input [veh/h]	0	581	251	416	709	0	380	1	226	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.28	1.28	1.28	1.28	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	80	0	0	14	0	0	0	12	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	61	3	0	47	0	0	0	16	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	885	324	532	969	0	380	1	254	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	233	85	140	255	0	100	0	67	0	0	0
Total Analysis Volume [veh/h]	0	932	341	560	1020	0	400	1	267	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	31	0	28	59	0	0	21	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	R	
C, Cycle Length [s]	80	80	80	80	80	80	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	29	29	26	57	19	19	
g / C, Green / Cycle	0.36	0.36	0.33	0.71	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.38	0.40	0.35	0.32	0.25	0.19	
s, saturation flow rate [veh/h]	1676	1593	1597	3192	1597	1425	
c, Capacity [veh/h]	608	577	519	2274	379	338	
d1, Uniform Delay [s]	25.50	25.50	27.00	4.86	30.50	28.62	
k, delay calibration	0.50	0.50	0.40	0.50	0.21	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	49.51	68.58	58.77	0.64	46.18	4.12	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	1.05	1.10	1.08	0.45	1.06	0.79	
d, Delay for Lane Group [s/veh]	75.01	94.08	85.77	5.50	76.68	32.73	
Lane Group LOS	F	F	F	A	F	C	
Critical Lane Group	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh]	18.68	20.81	17.26	2.32	11.63	4.86	
50th-Percentile Queue Length [ft]	467.01	520.21	431.53	57.98	290.81	121.44	
95th-Percentile Queue Length [veh]	26.58	30.15	25.25	4.17	17.76	8.47	
95th-Percentile Queue Length [ft]	664.62	753.75	631.34	104.36	443.89	211.81	

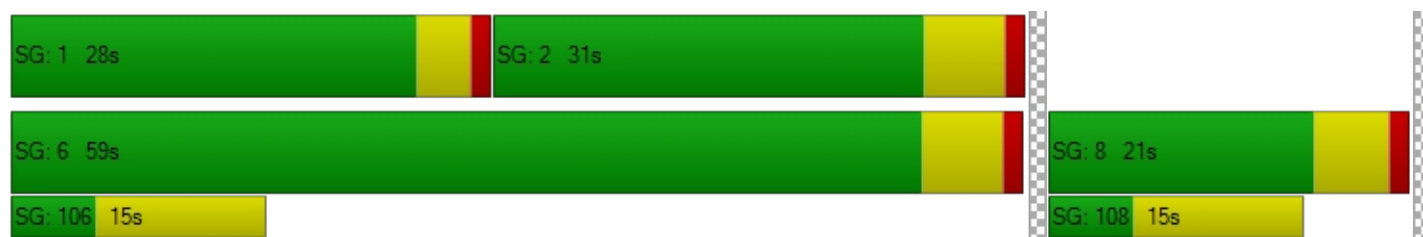


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	81.05	94.08	85.77	5.50	0.00	76.68	76.68	32.73	0.00	0.00	0.00
Movement LOS		F	F	F	A		F	E	C			
d_A, Approach Delay [s/veh]	84.54			33.95			59.11			0.00		
Approach LOS	F			C			E			A		
d_I, Intersection Delay [s/veh]	57.01											
Intersection LOS	E											
Intersection V/C	1.001											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 8: SR60 WB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	62.2
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.014

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	1	0	0	0	0	0	0	0	1
Pocket Length [ft]	530.00	100.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	322	456	0	0	993	339	0	0	0	304	5	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	35	0	0	11	0	0	0	0	27	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	3	0	0	0	0	15	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	359	330	0	0	509	0	0	0	0	224	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	665	800	0	0	1466	322	0	0	0	570	5	150
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	175	211	0	0	386	85	0	0	0	150	1	39
Total Analysis Volume [veh/h]	700	842	0	0	1543	339	0	0	0	600	5	158
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	0	30	0
Amber [s]	3.2	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	21	57	0	0	36	0	0	0	0	0	33	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C		C	R
C, Cycle Length [s]	90	90	90	90		90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00		2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00		1.00	1.00
g_i, Effective Green Time [s]	19	55	34	34		31	31
g / C, Green / Cycle	0.21	0.61	0.38	0.38		0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.23	0.18	0.39	0.41		0.38	0.11
s, saturation flow rate [veh/h]	3101	4567	3192	1531		1597	1425
c, Capacity [veh/h]	655	2791	1206	578		550	491
d1, Uniform Delay [s]	35.50	8.34	28.00	28.00		29.50	21.75
k, delay calibration	0.11	0.50	0.50	0.50		0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	38.62	0.28	37.07	62.54		68.49	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	1.07	0.30	1.04	1.08		1.10	0.32
d, Delay for Lane Group [s/veh]	74.12	8.62	65.07	90.54		97.99	22.13
Lane Group LOS	F	A	F	F		F	C
Critical Lane Group	Yes	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh]	10.31	2.27	18.05	21.40		21.42	2.37
50th-Percentile Queue Length [ft]	257.72	56.72	451.18	534.97		535.49	59.26
95th-Percentile Queue Length [veh]	16.11	4.08	25.70	30.62		30.85	4.27
95th-Percentile Queue Length [ft]	402.87	102.10	642.54	765.60		771.24	106.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	74.12	8.62	0.00	0.00	69.83	90.54	0.00	0.00	0.00	97.99	97.99	22.13
Movement LOS	F	A			E	F				F	F	C
d_A, Approach Delay [s/veh]	38.36			73.56			0.00			82.28		
Approach LOS	D			E			A			F		
d_I, Intersection Delay [s/veh]	62.18											
Intersection LOS	E											
Intersection V/C	1.014											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: SR60 EB Ramp / Archibald Ave**

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.667

**Intersection Setup**

Name	Archibald Ave											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							+ + +					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	345.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Archibald Ave											
	0	712	396	306	985	0	79	1	450	0	0	0
Base Volume Input [veh/h]	0	712	396	306	985	0	79	1	450	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	35	86	0	38	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	12	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	614	271	0	735	0	0	0	259	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1327	745	291	1727	0	79	1	709	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	349	196	77	454	0	21	0	187	0	0	0
Total Analysis Volume [veh/h]	0	1397	784	306	1818	0	83	1	746	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	4.8	0.0	3.2	4.8	0.0	0.0	4.4	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	18	39	0	0	21	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	L	C	R	
C, Cycle Length [s]	60	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	
g_i, Effective Green Time [s]	26	9	37	19	19	19	
g / C, Green / Cycle	0.43	0.15	0.62	0.32	0.32	0.32	
(v / s)_i Volume / Saturation Flow Rate	0.31	0.10	0.40	0.05	0.26	0.26	
s, saturation flow rate [veh/h]	4567	3101	4567	1597	1426	1425	
c, Capacity [veh/h]	1954	483	2818	505	451	451	
d1, Uniform Delay [s]	14.15	23.72	7.31	14.79	19.00	19.00	
k, delay calibration	0.50	0.11	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.27	1.38	1.15	0.15	3.96	3.96	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.72	0.63	0.65	0.16	0.83	0.83	
d, Delay for Lane Group [s/veh]	16.42	25.09	8.46	14.94	22.96	22.97	
Lane Group LOS	B	C	A	B	C	C	
Critical Lane Group	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh]	4.56	1.92	3.37	0.73	4.57	4.57	
50th-Percentile Queue Length [ft]	113.94	47.93	84.18	18.17	114.35	114.34	
95th-Percentile Queue Length [veh]	8.06	3.45	6.06	1.31	8.08	8.08	
95th-Percentile Queue Length [ft]	201.47	86.27	151.53	32.70	202.03	202.03	



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	16.42	0.00	25.09	8.46	0.00	14.94	22.96	22.96	0.00	0.00	0.00
Movement LOS		B		C	A		B	C	C			
d_A, Approach Delay [s/veh]	16.42			10.86			22.16			0.00		
Approach LOS	B			B			C			A		
d_I, Intersection Delay [s/veh]	14.80											
Intersection LOS	B											
Intersection V/C	0.667											

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 10: Euclid Ave / Walnut St**

Control Type:	Signalized	Delay (sec / veh):	31.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.868

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	225.00	100.00	100.00	180.00	100.00	175.00	85.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Walnut St			Walnut St		
Base Volume Input [veh/h]	118	995	63	276	805	145	115	335	132	87	262	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.20	1.20	1.20	1.20	1.20	1.20	1.19	1.19	1.19	1.19	1.19	1.19
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	27	0	0	8	0	0	0	1	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	796	0	0	197	0	0	0	12	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	2036	76	331	1194	174	137	399	170	104	312	173
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	536	20	87	314	46	36	105	45	27	82	46
Total Analysis Volume [veh/h]	152	2143	80	348	1257	183	144	420	179	109	328	182
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	44	0	13	47	0	0	23	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	42	42	11	46	46	21	21	21	21	21	21
g / C, Green / Cycle	0.09	0.53	0.53	0.14	0.57	0.57	0.26	0.26	0.26	0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.06	0.53	0.06	0.13	0.31	0.14	0.20	0.21	0.21	0.17	0.18	0.18
s, saturation flow rate [veh/h]	2750	4050	1264	2750	4050	1264	707	1487	1338	652	1487	1312
c, Capacity [veh/h]	256	2126	664	378	2306	720	155	390	351	128	390	344
d1, Uniform Delay [s]	34.82	19.00	9.63	34.07	10.76	8.67	38.34	27.59	27.63	39.17	26.56	26.65
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.13	0.13	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.19	21.42	0.37	9.41	0.93	0.85	20.97	4.73	5.45	14.05	2.17	2.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.59	1.01	0.12	0.92	0.55	0.25	0.93	0.81	0.81	0.85	0.69	0.70
d, Delay for Lane Group [s/veh]	37.01	40.42	10.01	43.47	11.69	9.53	59.31	32.32	33.09	53.21	28.73	29.24
Lane Group LOS	D	F	B	D	B	A	E	C	C	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.43	14.99	0.68	3.65	3.97	1.50	3.62	5.72	5.25	2.56	4.52	4.10
50th-Percentile Queue Length [ft]	35.81	374.70	17.12	91.18	99.28	37.47	90.57	142.91	131.24	63.99	113.01	102.54
95th-Percentile Queue Length [veh]	2.58	21.46	1.23	6.57	7.15	2.70	6.52	9.64	9.01	4.61	8.01	7.38
95th-Percentile Queue Length [ft]	64.46	536.58	30.82	164.13	178.70	67.44	163.03	240.94	225.18	115.19	200.19	184.57

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.01	40.42	10.01	43.47	11.69	9.53	59.31	32.51	33.09	53.21	28.82	29.24
Movement LOS	D	F	B	D	B	A	E	C	C	D	C	C
d_A, Approach Delay [s/veh]	39.17			17.65			37.84			33.24		
Approach LOS	D			B			D			C		
d_I, Intersection Delay [s/veh]	31.37											
Intersection LOS	C											
Intersection V/C	0.868											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 11: Grove Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	23.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.621

**Intersection Setup**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↱			↵↱			↵↱			↵↱		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	19.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Walnut St			Walnut Ave		
Base Volume Input [veh/h]	63	506	34	179	495	141	128	257	52	19	153	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.28	1.28	1.28	1.28	1.28	1.28	1.19	1.19	1.19	1.19	1.19	1.19
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	80	2	0	26	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	65	0	0	60	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	793	46	229	720	180	152	306	62	24	182	133
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	209	12	60	189	47	40	81	16	6	48	35
Total Analysis Volume [veh/h]	87	835	48	241	758	189	160	322	65	25	192	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	22	0	15	21	0	12	23	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	6	27	27	13	34	34	10	18	18	24	12	12
g / C, Green / Cycle	0.09	0.39	0.39	0.19	0.48	0.48	0.14	0.26	0.26	0.34	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.26	0.15	0.29	0.29	0.10	0.12	0.12	0.02	0.10	0.11
s, saturation flow rate [veh/h]	1597	1676	1711	1597	1676	1627	1597	1676	1580	1045	1676	1451
c, Capacity [veh/h]	146	646	659	297	804	780	219	427	403	396	298	258
d1, Uniform Delay [s]	30.56	17.89	17.89	27.33	13.28	13.30	28.97	22.03	22.06	18.33	26.39	26.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.85	5.62	5.51	5.35	3.26	3.38	4.66	0.78	0.85	0.07	1.80	2.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.60	0.68	0.68	0.81	0.60	0.60	0.73	0.46	0.47	0.06	0.58	0.61
d, Delay for Lane Group [s/veh]	34.41	23.51	23.40	32.69	16.54	16.68	33.63	22.81	22.91	18.39	28.19	28.94
Lane Group LOS	C	C	C	C	B	B	C	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.46	5.96	6.06	3.92	5.12	5.01	2.67	2.60	2.49	0.27	2.60	2.42
50th-Percentile Queue Length [ft]	36.38	149.03	151.60	98.08	127.91	125.32	66.85	64.95	62.15	6.85	64.92	60.60
95th-Percentile Queue Length [veh]	2.62	9.97	10.10	7.06	8.83	8.68	4.81	4.68	4.48	0.49	4.67	4.36
95th-Percentile Queue Length [ft]	65.48	249.14	252.57	176.54	220.66	217.12	120.32	116.91	111.88	12.32	116.86	109.08

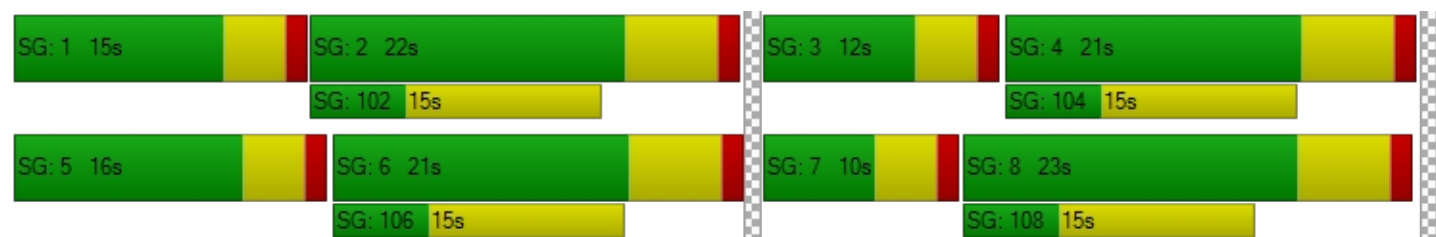


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	34.41	23.46	23.40	32.69	16.59	16.68	33.63	22.85	22.91	18.39	28.26	28.94
Movement LOS	C	C	C	C	B	B	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	24.44			19.87			26.01			27.84		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	23.34											
Intersection LOS	C											
Intersection V/C	0.621											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 12: Archibald Ave / Walnut Ave**

Control Type:	Signalized	Delay (sec / veh):	8.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑↑↑			↵ ↑↑↑			↵↑			↵↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Walnut Ave			Walnut Ave		
Base Volume Input [veh/h]	65	736	43	138	1073	14	18	7	32	23	12	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	121	3	0	38	0	0	0	1	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	14	0	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	926	0	0	949	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	1760	44	131	2024	13	18	7	33	24	12	74
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	463	12	34	533	3	5	2	9	6	3	19
Total Analysis Volume [veh/h]	67	1853	46	138	2131	14	19	7	35	25	13	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	21	0	19	30	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	40	40	8	42	42	7	7	7	7
g / C, Green / Cycle	0.09	0.66	0.66	0.13	0.70	0.70	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.04	0.39	0.39	0.09	0.44	0.44	0.02	0.03	0.02	0.06
s, saturation flow rate [veh/h]	1597	3192	1656	1597	3192	1671	1170	1520	1223	1456
c, Capacity [veh/h]	149	2112	1095	206	2226	1165	166	166	209	159
d1, Uniform Delay [s]	25.76	5.65	5.65	24.91	4.91	4.91	28.14	24.47	26.33	25.38
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.13	1.23	2.36	3.74	1.38	2.62	0.30	0.79	0.25	3.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

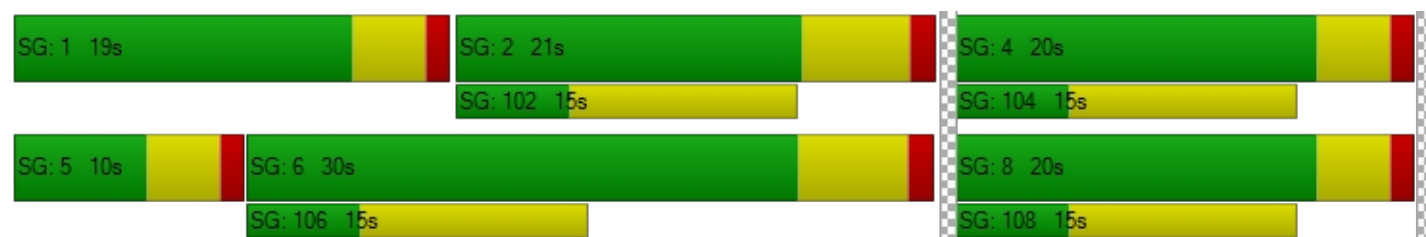
X, volume / capacity	0.45	0.59	0.59	0.67	0.63	0.63	0.11	0.25	0.12	0.57
d, Delay for Lane Group [s/veh]	27.89	6.88	8.01	28.65	6.29	7.53	28.44	25.26	26.59	28.57
Lane Group LOS	C	A	A	C	A	A	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.91	2.71	3.16	1.90	2.55	3.08	0.26	0.53	0.32	1.26
50th-Percentile Queue Length [ft]	22.80	67.66	78.96	47.59	63.79	76.94	6.47	13.35	8.11	31.48
95th-Percentile Queue Length [veh]	1.64	4.87	5.69	3.43	4.59	5.54	0.47	0.96	0.58	2.27
95th-Percentile Queue Length [ft]	41.04	121.79	142.13	85.66	114.82	138.49	11.65	24.02	14.59	56.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.89	7.25	8.01	28.65	6.71	7.53	28.44	25.26	25.26	26.59	28.57	28.57
Movement LOS	C	A	A	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	7.97			8.04			26.25			28.15		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.79											
Intersection LOS	A											
Intersection V/C	0.546											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 13: Euclid Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.836

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00	20.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	260.00	100.00	100.00	240.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Riverside Dr					
Base Volume Input [veh/h]	67	832	259	118	717	133	118	395	45	200	459	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	0.86	0.86	0.86	0.86	0.86	0.86
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	26	0	0	8	0	0	0	1	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	46	706	0	0	195	2	0	284	13	0	248	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	1866	347	158	1187	180	101	624	53	172	643	72
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	491	91	42	312	47	27	164	14	45	169	19
Total Analysis Volume [veh/h]	145	1964	365	166	1249	189	106	657	56	181	677	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups						3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	38	0	10	38	11	11	21	0	11	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	36	36	8	36	46	8	19	19	9	20	20
g / C, Green / Cycle	0.10	0.45	0.45	0.10	0.45	0.57	0.10	0.24	0.24	0.11	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.44	0.45	0.09	0.25	0.12	0.06	0.19	0.19	0.10	0.20	0.20
s, saturation flow rate [veh/h]	1774	3547	1721	1774	5074	1583	1774	1937	1884	1774	1863	1871
c, Capacity [veh/h]	177	1601	777	177	2291	864	172	457	445	200	469	471
d1, Uniform Delay [s]	35.28	21.37	21.94	35.74	15.97	9.37	34.70	28.70	28.70	35.09	28.05	28.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.86	15.95	33.34	19.19	0.94	0.13	3.58	3.10	3.20	14.18	3.32	3.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	0.97	1.00	0.94	0.55	0.22	0.62	0.79	0.79	0.91	0.80	0.80
d, Delay for Lane Group [s/veh]	44.14	37.32	55.28	54.93	16.90	9.50	38.28	31.80	31.90	49.27	31.38	31.36
Lane Group LOS	D	D	F	D	B	A	D	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	3.07	15.72	19.73	4.00	5.09	1.48	2.06	6.45	6.29	4.09	6.68	6.71
50th-Percentile Queue Length [ft]	76.69	392.88	493.22	99.92	127.17	37.08	51.47	161.31	157.32	102.22	167.01	167.70
95th-Percentile Queue Length [veh]	5.52	22.22	27.10	7.19	8.79	2.67	3.71	10.62	10.41	7.36	10.92	10.96
95th-Percentile Queue Length [ft]	138.04	555.41	677.53	179.86	219.64	66.75	92.65	265.46	260.17	184.00	272.98	273.89



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.14	41.12	55.28	54.93	16.90	9.50	38.28	31.84	31.90	49.27	31.37	31.36
Movement LOS	D	D	E	D	B	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	43.38			19.97			32.68			34.84		
Approach LOS	D			B			C			C		
d_I, Intersection Delay [s/veh]	34.07											
Intersection LOS	C											
Intersection V/C	0.836											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 14: Grove Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.377

**Intersection Setup**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	90.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Riverside Dr			Riverside Dr		
Base Volume Input [veh/h]	14	287	0	0	212	156	146	0	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	0.86	0.86	0.86	0.86	0.86	0.86
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	83	2	0	27	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	29	0	47	13	0	0	285	0	0	250	36
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	545	2	47	360	236	126	285	15	1	250	36
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	143	1	12	95	62	33	75	4	0	66	9
Total Analysis Volume [veh/h]	24	574	2	49	379	248	133	300	16	1	263	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	21	0	18	29	0	10	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	18	18	18	18	18	18	8	33	33	2	28	28
g / C, Green / Cycle	0.30	0.30	0.30	0.30	0.30	0.30	0.13	0.56	0.56	0.04	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.03	0.17	0.17	0.07	0.20	0.20	0.08	0.09	0.10	0.00	0.09	0.09
s, saturation flow rate [veh/h]	716	1676	1674	750	1676	1459	1597	1676	1647	1597	1676	1604
c, Capacity [veh/h]	200	508	507	227	508	442	204	932	916	65	787	753
d1, Uniform Delay [s]	24.47	17.61	17.61	23.62	18.20	18.25	24.90	6.53	6.53	27.61	9.29	9.31
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	1.00	1.00	0.47	1.45	1.72	3.51	0.40	0.41	0.09	0.55	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.12	0.57	0.57	0.22	0.66	0.66	0.65	0.17	0.17	0.02	0.19	0.20
d, Delay for Lane Group [s/veh]	24.73	18.61	18.61	24.09	19.65	19.98	28.41	6.93	6.94	27.70	9.83	9.89
Lane Group LOS	C	B	B	C	B	B	C	A	A	C	A	A
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.30	3.02	3.01	0.60	3.64	3.25	1.83	0.81	0.81	0.01	1.04	1.02
50th-Percentile Queue Length [ft]	7.47	75.42	75.35	15.09	91.08	81.25	45.69	20.36	20.16	0.36	26.00	25.59
95th-Percentile Queue Length [veh]	0.54	5.43	5.43	1.09	6.56	5.85	3.29	1.47	1.45	0.03	1.87	1.84
95th-Percentile Queue Length [ft]	13.45	135.75	135.63	27.15	163.95	146.26	82.24	36.65	36.30	0.65	46.80	46.06

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.73	18.61	18.61	24.09	19.69	19.98	28.41	6.93	6.94	27.70	9.86	9.89
Movement LOS	C	B	B	C	B	B	C	A	A	C	A	A
d_A, Approach Delay [s/veh]	18.85			20.12			13.29			9.92		
Approach LOS	B			C			B			A		
d_I, Intersection Delay [s/veh]	16.71											
Intersection LOS	B											
Intersection V/C	0.377											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: Archibald Ave / Riverside Dr**

Control Type:	Signalized	Delay (sec / veh):	25.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Riverside Dr					
Base Volume Input [veh/h]	0	460	78	254	632	0	0	0	0	146	0	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.86	0.86	0.86	0.86	0.86	0.86	0.96	0.96	0.96	0.96	0.96	0.96
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	127	8	0	39	0	0	0	1	3	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	14	0	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	93	862	89	119	749	140	85	245	86	99	328	82
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	1399	164	337	1350	140	85	245	87	242	328	180
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	368	43	89	355	37	22	64	23	64	86	47
Total Analysis Volume [veh/h]	100	1473	173	355	1421	147	89	258	92	255	345	189
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.2	5.2	0.0	3.2	5.2	0.0	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	22	0	12	24	0	11	21	0	15	25	12
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	28	28	10	32	32	6	11	11	13	17	29
g / C, Green / Cycle	0.09	0.41	0.41	0.14	0.46	0.46	0.09	0.15	0.15	0.19	0.25	0.42
(v / s)_i Volume / Saturation Flow Rate	0.03	0.34	0.34	0.11	0.33	0.33	0.06	0.08	0.06	0.16	0.11	0.13
s, saturation flow rate [veh/h]	3101	3192	1588	3101	3192	1597	1597	3192	1482	1597	3192	1425
c, Capacity [veh/h]	288	1294	643	443	1453	727	145	485	225	297	788	551
d1, Uniform Delay [s]	29.75	18.88	18.90	29.04	15.44	15.47	30.64	27.39	26.84	27.62	22.26	15.17
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	7.09	13.32	3.41	3.08	6.12	4.17	0.91	1.19	7.23	0.38	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.35	0.85	0.85	0.80	0.72	0.72	0.61	0.53	0.41	0.86	0.44	0.34
d, Delay for Lane Group [s/veh]	30.47	25.97	32.22	32.45	18.52	21.59	34.81	28.30	28.03	34.84	22.64	15.54
Lane Group LOS	C	C	C	C	B	C	C	C	C	C	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.77	8.15	9.25	2.88	6.23	6.89	1.52	1.91	1.37	4.39	2.23	1.93
50th-Percentile Queue Length [ft]	19.19	203.85	231.18	72.04	155.87	172.34	38.00	47.72	34.14	109.68	55.75	48.21
95th-Percentile Queue Length [veh]	1.38	12.84	14.23	5.19	10.33	11.20	2.74	3.44	2.46	7.82	4.01	3.47
95th-Percentile Queue Length [ft]	34.54	320.92	355.85	129.68	258.24	279.99	68.40	85.89	61.45	195.56	100.35	86.77

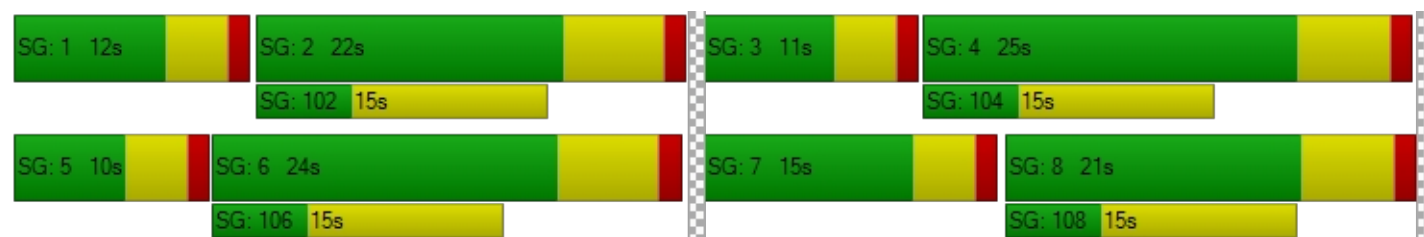


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.47	27.56	32.22	32.45	19.34	21.59	34.81	28.30	28.03	34.84	22.64	15.54
Movement LOS	C	C	C	C	B	C	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	28.19			21.93			29.56			24.89		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.32											
Intersection LOS	C											
Intersection V/C	0.700											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 16: Euclid Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	120.00	100.00	120.00	125.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	45	1118	172	18	817	63	59	204	46	71	82	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	1.31	1.31	1.31	1.31	1.31	1.31
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	26	0	0	8	0	0	0	1	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	25	751	0	0	208	0	0	240	20	0	280	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	2294	230	24	1334	84	77	507	81	93	387	15
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	604	61	6	351	22	20	133	21	24	102	4
Total Analysis Volume [veh/h]	92	2415	242	25	1404	88	81	534	85	98	407	16
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	64	41	0	21	41	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	0	39	39	0	39	39	17	17	17	17	17	17
g / C, Green / Cycle	0.00	0.65	0.65	0.00	0.65	0.65	0.28	0.28	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.81	0.55	0.57	0.72	0.31	0.31	0.09	0.19	0.19	0.14	0.13	0.13
s, saturation flow rate [veh/h]	114	3192	1601	35	3192	1626	864	1676	1597	721	1676	1654
c, Capacity [veh/h]	120	2075	1041	120	2075	1057	261	475	453	194	475	469
d1, Uniform Delay [s]	30.00	8.12	8.50	30.00	5.32	5.32	23.20	18.99	19.01	27.68	17.65	17.65
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	36.56	4.37	10.11	3.90	0.79	1.54	0.67	1.62	1.71	2.03	0.66	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

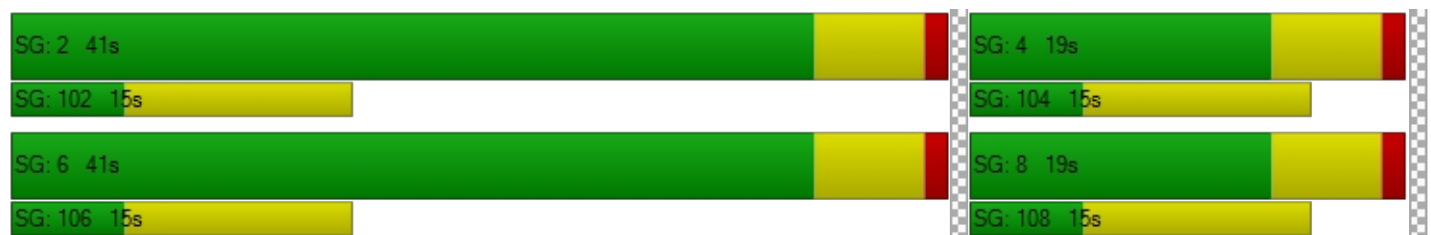
X, volume / capacity	0.77	0.84	0.87	0.21	0.48	0.48	0.31	0.67	0.67	0.51	0.45	0.45
d, Delay for Lane Group [s/veh]	66.56	12.50	18.61	33.90	6.11	6.86	23.87	20.61	20.72	29.71	18.31	18.33
Lane Group LOS	E	B	B	C	A	A	C	C	C	C	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	2.75	6.08	8.17	0.55	2.01	2.27	1.00	3.57	3.43	1.42	2.18	2.16
50th-Percentile Queue Length [ft]	68.80	152.08	204.23	13.67	50.33	56.81	24.93	89.25	85.71	35.39	54.57	54.06
95th-Percentile Queue Length [veh]	4.95	10.13	12.86	0.98	3.62	4.09	1.80	6.43	6.17	2.55	3.93	3.89
95th-Percentile Queue Length [ft]	123.84	253.20	321.41	24.61	90.59	102.26	44.88	160.65	154.28	63.70	98.23	97.31

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	66.56	14.19	18.61	33.90	6.33	6.86	23.87	20.66	20.72	29.71	18.32	18.33
Movement LOS	E	B	B	C	A	A	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	16.33			6.82			21.04			20.46		
Approach LOS	B			A			C			C		
d_I, Intersection Delay [s/veh]	14.69											
Intersection LOS	B											
Intersection V/C	0.757											

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 17: Grove Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	11.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.369

**Intersection Setup**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	23	343	25	17	228	15	81	136	26	9	25	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.31	1.31	1.31	1.31	1.31	1.31
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	88	0	0	28	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	29	13	0	13	0	0	261	1	9	286	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	635	51	26	385	23	106	439	35	21	319	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	167	13	7	101	6	28	116	9	6	84	7
Total Analysis Volume [veh/h]	40	668	54	27	405	24	112	462	37	22	336	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	34	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	39	39	39	39	39	39	17	17	17	17	17	17
g / C, Green / Cycle	0.65	0.65	0.65	0.65	0.65	0.65	0.28	0.28	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.05	0.22	0.22	0.04	0.13	0.13	0.12	0.15	0.15	0.03	0.11	0.11
s, saturation flow rate [veh/h]	859	1676	1633	655	1676	1644	914	1676	1633	806	1676	1635
c, Capacity [veh/h]	590	1090	1062	445	1090	1069	313	475	463	261	475	463
d1, Uniform Delay [s]	6.44	4.70	4.70	7.97	4.22	4.22	21.26	18.14	18.16	20.97	17.30	17.32
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.83	0.85	0.26	0.41	0.42	0.69	0.92	0.96	0.14	0.51	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.07	0.34	0.34	0.06	0.20	0.20	0.36	0.53	0.53	0.08	0.38	0.39
d, Delay for Lane Group [s/veh]	6.67	5.53	5.55	8.23	4.62	4.64	21.95	19.07	19.11	21.11	17.81	17.85
Lane Group LOS	A	A	A	A	A	A	C	B	B	C	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.19	1.20	1.17	0.16	0.63	0.62	1.31	2.68	2.63	0.25	1.83	1.81
50th-Percentile Queue Length [ft]	4.83	29.94	29.37	4.05	15.63	15.49	32.84	67.08	65.72	6.14	45.82	45.19
95th-Percentile Queue Length [veh]	0.35	2.16	2.11	0.29	1.13	1.12	2.36	4.83	4.73	0.44	3.30	3.25
95th-Percentile Queue Length [ft]	8.69	53.90	52.87	7.29	28.14	27.88	59.11	120.75	118.29	11.05	82.48	81.34

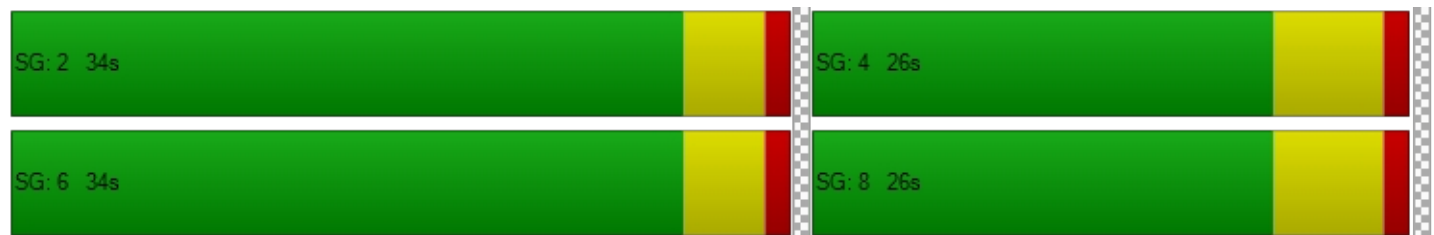


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	6.67	5.54	5.55	8.23	4.63	4.64	21.95	19.09	19.11	21.11	17.83	17.85
Movement LOS	A	A	A	A	A	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	5.60			4.84			19.62			18.01		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	11.47											
Intersection LOS	B											
Intersection V/C	0.369											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Archibald Ave / Chino Ave**

Control Type:	Signalized	Delay (sec / veh):	22.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Chino Ave			Chino Ave		
Base Volume Input [veh/h]	2	657	43	82	860	4	10	7	6	44	3	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.86	0.86	0.86	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	137	7	0	43	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	14	0	0	18	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	138	1021	63	37	886	63	45	118	115	72	150	39
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	1737	107	108	1687	66	55	125	121	118	153	94
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	457	28	28	444	17	14	33	32	31	40	25
Total Analysis Volume [veh/h]	147	1828	113	114	1776	69	58	132	127	124	161	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	23	0	10	22	0	10	21	0	16	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	9	35	35	8	34	34	6	11	11	8	13	13
g / C, Green / Cycle	0.13	0.51	0.51	0.11	0.49	0.49	0.08	0.15	0.15	0.11	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.09	0.40	0.40	0.07	0.38	0.38	0.04	0.04	0.09	0.08	0.08	0.08
s, saturation flow rate [veh/h]	1597	3192	1627	1597	3192	1645	1597	3192	1482	1597	1676	1470
c, Capacity [veh/h]	205	1613	822	177	1556	802	128	495	230	183	317	278
d1, Uniform Delay [s]	29.27	14.32	14.38	29.80	14.85	14.87	30.72	26.06	27.33	29.75	25.02	25.13
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.61	4.16	8.04	3.89	3.98	7.54	2.48	0.29	2.07	4.35	0.91	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

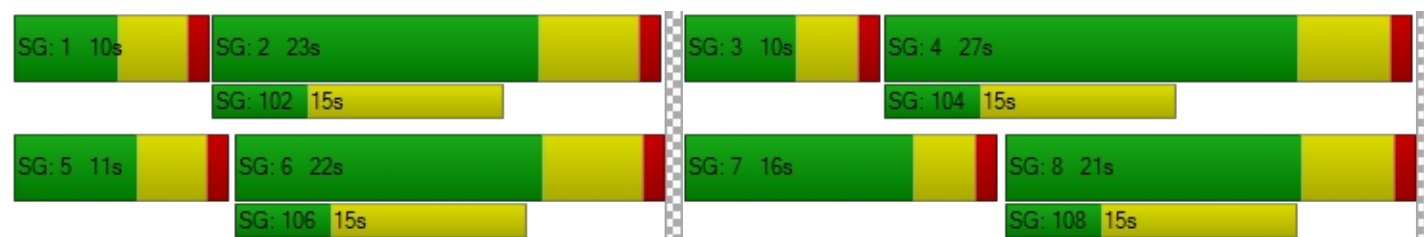
X, volume / capacity	0.72	0.80	0.80	0.64	0.78	0.78	0.45	0.27	0.55	0.68	0.43	0.45
d, Delay for Lane Group [s/veh]	33.89	18.48	22.42	33.69	18.84	22.42	33.21	26.35	29.40	34.10	25.93	26.25
Lane Group LOS	C	B	C	C	B	C	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	2.47	7.65	8.75	1.90	7.36	8.40	0.96	0.92	1.95	2.09	1.91	1.78
50th-Percentile Queue Length [ft]	61.65	191.27	218.74	47.60	183.92	209.95	24.10	23.04	48.80	52.20	47.86	44.46
95th-Percentile Queue Length [veh]	4.44	12.19	13.60	3.43	11.81	13.15	1.74	1.66	3.51	3.76	3.45	3.20
95th-Percentile Queue Length [ft]	110.97	304.67	340.02	85.67	295.13	328.77	43.39	41.47	87.84	93.97	86.15	80.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.89	19.65	22.42	33.69	19.96	22.42	33.21	26.35	29.40	34.10	25.99	26.25
Movement LOS	C	B	C	C	B	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.81			20.85			28.83			28.68		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	22.00											
Intersection LOS	C											
Intersection V/C	0.639											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Euclid Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	22.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.691

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐   ⇐			⇐   ⇐			⇐  ⇐			⇐  ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	15.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	185.00	100.00	100.00	165.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	84	1062	18	11	837	88	284	220	142	16	37	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	0.90	0.90	0.90	0.90	0.90	0.90
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	27	0	0	8	0	0	0	1	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	19	0	0	23	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	34	776	0	0	228	0	0	18	25	0	14	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	2245	24	15	1381	118	256	216	154	14	47	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	591	6	4	363	31	67	57	41	4	12	2
Total Analysis Volume [veh/h]	157	2363	25	16	1454	124	269	227	162	15	49	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	5	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	32	0	10	31	0	17	38	0	13	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		Yes	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	9	46	46	4	41	41	15	24	24	0	7	7
g / C, Green / Cycle	0.11	0.57	0.57	0.05	0.51	0.51	0.19	0.31	0.31	0.00	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.12	0.49	0.49	0.01	0.33	0.33	0.17	0.07	0.11	0.72	0.02	0.02
s, saturation flow rate [veh/h]	1270	3192	1668	1270	3192	1610	1597	3192	1482	21	1676	1605
c, Capacity [veh/h]	217	1828	955	135	1618	816	299	976	453	90	156	150
d1, Uniform Delay [s]	36.76	14.34	14.38	37.68	14.49	14.49	31.76	20.76	21.65	40.00	33.46	33.48
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.52	5.44	9.97	0.39	2.02	3.97	9.52	0.12	0.48	3.96	0.55	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.72	0.86	0.86	0.12	0.65	0.65	0.90	0.23	0.36	0.17	0.18	0.19
d, Delay for Lane Group [s/veh]	41.28	19.79	24.35	38.07	16.51	18.46	41.28	20.88	22.13	43.96	34.00	34.07
Lane Group LOS	D	B	C	D	B	B	D	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.26	10.83	12.57	0.31	6.40	6.90	5.55	1.50	2.26	0.43	0.50	0.50
50th-Percentile Queue Length [ft]	81.43	270.78	314.37	7.69	159.93	172.42	138.83	37.39	56.54	10.81	12.61	12.57
95th-Percentile Queue Length [veh]	5.86	16.23	18.39	0.55	10.55	11.20	9.42	2.69	4.07	0.78	0.91	0.91
95th-Percentile Queue Length [ft]	146.58	405.71	459.75	13.85	263.63	280.10	235.44	67.30	101.78	19.45	22.70	22.63

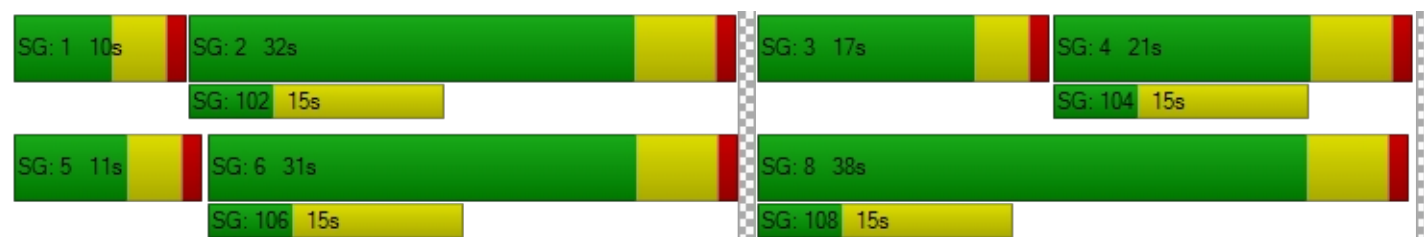


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	41.28	21.33	24.35	38.07	17.05	18.46	41.28	20.88	22.13	43.96	34.03	34.07
Movement LOS	D	C	C	D	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	22.59			17.37			29.53			36.13		
Approach LOS	C			B			C			D		
d_I, Intersection Delay [s/veh]	22.02											
Intersection LOS	C											
Intersection V/C	0.691											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 20: Grove Ave / Schaefer Ave**

Control Type:	Signalized	Delay (sec / veh):	10.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.274

**Intersection Setup**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Schaefer Ave			Schaefer Ave		
Base Volume Input [veh/h]	17	241	9	20	200	34	105	64	44	9	18	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	0.90	0.90	0.90	0.90	0.90	0.90
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	90	0	0	29	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	41	0	0	22	1	0	16	2	0	12	1
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	495	14	30	353	52	95	74	42	8	28	19
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	130	4	8	93	14	25	19	11	2	7	5
Total Analysis Volume [veh/h]	29	521	15	32	372	55	100	78	44	8	29	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	32	0	0	32	0	0	28	0	0	28	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	30	30	30	30	30	30	26	26	26	26	26	26
g / C, Green / Cycle	0.50	0.50	0.50	0.50	0.50	0.50	0.43	0.43	0.43	0.43	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.04	0.18	0.18	0.05	0.15	0.15	0.09	0.04	0.05	0.01	0.02	0.02
s, saturation flow rate [veh/h]	764	1487	1472	691	1487	1421	1078	1487	1315	1009	1487	1298
c, Capacity [veh/h]	423	743	736	377	743	711	558	644	570	513	644	563
d1, Uniform Delay [s]	11.35	9.16	9.16	12.38	8.78	8.80	11.67	10.06	10.09	11.26	9.80	9.82
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.31	1.37	1.38	0.44	0.99	1.06	0.70	0.30	0.37	0.06	0.11	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

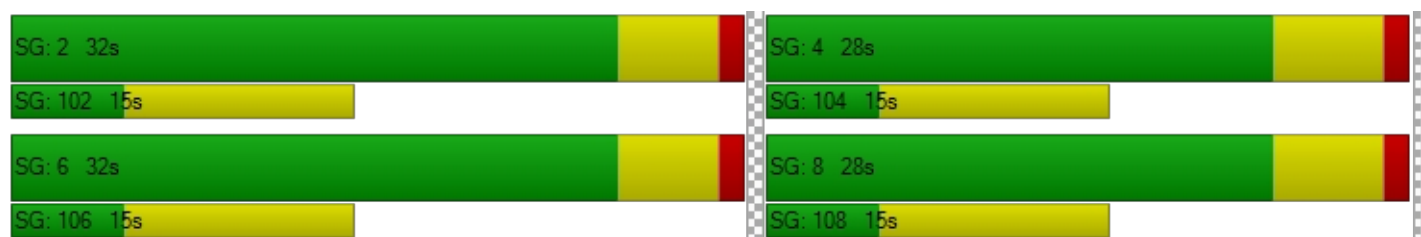
X, volume / capacity	0.07	0.36	0.36	0.08	0.29	0.30	0.18	0.10	0.10	0.02	0.04	0.04
d, Delay for Lane Group [s/veh]	11.67	10.52	10.54	12.82	9.78	9.86	12.38	10.36	10.46	11.31	9.91	9.96
Lane Group LOS	B	B	B	B	A	A	B	B	B	B	A	A
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	0.23	1.77	1.76	0.27	1.36	1.33	0.83	0.45	0.44	0.06	0.17	0.17
50th-Percentile Queue Length [ft]	5.64	44.35	44.08	6.75	33.98	33.20	20.82	11.32	10.96	1.58	4.33	4.34
95th-Percentile Queue Length [veh]	0.41	3.19	3.17	0.49	2.45	2.39	1.50	0.81	0.79	0.11	0.31	0.31
95th-Percentile Queue Length [ft]	10.15	79.83	79.35	12.14	61.16	59.75	37.47	20.37	19.72	2.84	7.80	7.82

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	11.67	10.53	10.54	12.82	9.81	9.86	12.38	10.38	10.46	11.31	9.92	9.96
Movement LOS	B	B	B	B	A	A	B	B	B	B	A	A
d_A, Approach Delay [s/veh]	10.59			10.03			11.29			10.13		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	10.49											
Intersection LOS	B											
Intersection V/C	0.274											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 21: SR71 SB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	50.2
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.008

**Intersection Setup**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Approach	Southbound			Eastbound			Westbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	SR71 SB Off Ramp			Grand Ave			Grand Ave			SR71 SB On Ramp		
Base Volume Input [veh/h]	706	4	474	0	1366	521	225	1191	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	52	0	0	0	11	0	0	35	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	6	0	0	0	11	0	0	8	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	379	0	0	270	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	764	4	474	0	1589	453	196	1349	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	201	1	125	0	418	119	52	355	0	0	0	0
Total Analysis Volume [veh/h]	804	4	499	0	1673	477	206	1420	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	0	8	0	7	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	0	0	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	0	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	3.2	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	43	0	0	57	0	10	67	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No		No	No				
Maximum Recall		No			No		No	No				
Pedestrian Recall		No			No		No	No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	C	L	C
C, Cycle Length [s]	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	41	41	41	55	55	8	65
g / C, Green / Cycle	0.37	0.37	0.37	0.50	0.50	0.07	0.59
(v / s)_i Volume / Saturation Flow Rate	0.29	0.29	0.39	0.51	0.54	0.07	0.35
s, saturation flow rate [veh/h]	1416	1417	1264	2831	1331	2750	4050
c, Capacity [veh/h]	528	528	471	1416	665	200	2393
d1, Uniform Delay [s]	30.28	30.27	34.50	27.50	27.50	51.00	14.17
k, delay calibration	0.34	0.34	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.04	7.01	58.04	27.06	57.52	37.50	1.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.77	0.77	1.06	1.01	1.08	1.03	0.59
d, Delay for Lane Group [s/veh]	37.31	37.29	92.54	54.56	85.02	88.50	15.26
Lane Group LOS	D	D	F	F	F	F	B
Critical Lane Group	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	9.98	9.97	19.48	22.22	26.52	3.74	6.92
50th-Percentile Queue Length [ft]	249.48	249.37	487.06	555.54	662.97	93.44	172.99
95th-Percentile Queue Length [veh]	15.16	15.15	27.78	30.25	37.00	6.73	11.23
95th-Percentile Queue Length [ft]	378.99	378.86	694.58	756.21	925.06	168.19	280.84



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.30	37.29	92.54	0.00	58.92	85.02	88.50	15.26	0.00	0.00	0.00	0.00
Movement LOS	D	D	F		E	F	F	B				
d_A, Approach Delay [s/veh]	58.39			64.71			24.54			0.00		
Approach LOS	E			E			C			A		
d_I, Intersection Delay [s/veh]	50.24											
Intersection LOS	D											
Intersection V/C	1.008											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: SR71 NB Ramp / Grand Ave**

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.023

**Intersection Setup**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	T T T			T T			T T T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	2	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Roswell Ave			Roswell Ave			Grand Ave					
Base Volume Input [veh/h]	372	108	189	83	0	423	295	1490	298	0	1372	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	1.00	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	64	0	0	203	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	379	0	0	270	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	372	108	189	83	0	423	257	1757	259	0	1681	31
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	98	28	50	22	0	111	68	462	68	0	442	8
Total Analysis Volume [veh/h]	392	114	199	87	0	445	271	1849	273	0	1769	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Permiss	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	2	0	1	0	3	3	8	0	0	4	0
Auxiliary Signal Groups						1,3						
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	0	5	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	0	30	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	3.0	0.0	3.2	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	9	0	19	19	50	0	0	31	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No		No		No	No	No			No	
Maximum Recall		No		No		No	No	No			No	
Pedestrian Recall		No		No		No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	R	L	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	19	19	19	7	47	17	48	29	29
g / C, Green / Cycle	0.24	0.24	0.24	0.09	0.59	0.21	0.60	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.22	0.21	0.16	0.06	0.35	0.19	0.46	0.33	0.31
s, saturation flow rate [veh/h]	1127	1277	1264	1416	1264	1416	4050	4050	1468
c, Capacity [veh/h]	344	374	300	124	708	301	2430	1468	532
d1, Uniform Delay [s]	30.62	29.16	27.60	35.49	11.95	30.68	11.78	24.40	23.45
k, delay calibration	0.14	0.12	0.11	0.11	0.41	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.39	2.70	2.51	7.03	3.43	9.63	2.31	10.88	15.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

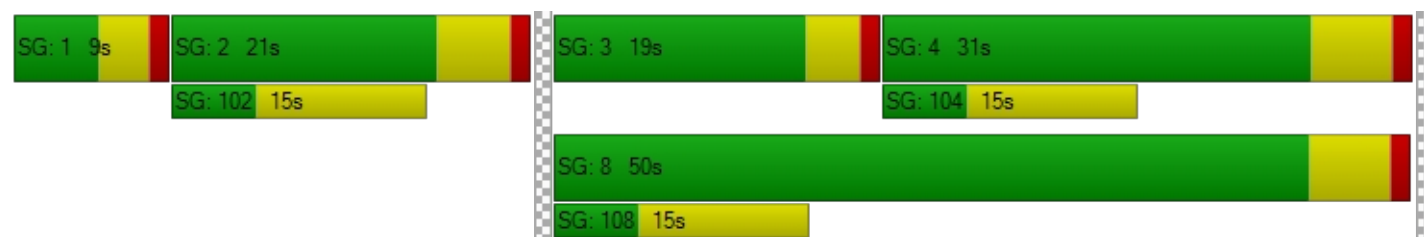
X, volume / capacity	0.71	0.70	0.66	0.70	0.63	0.90	0.76	0.92	0.85
d, Delay for Lane Group [s/veh]	34.01	31.86	30.11	42.52	15.38	40.31	14.08	35.28	38.74
Lane Group LOS	C	C	C	D	B	D	B	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	4.62	4.79	3.42	1.81	5.10	5.55	6.81	8.80	9.30
50th-Percentile Queue Length [ft]	115.40	119.68	85.57	45.30	127.42	138.78	170.35	220.01	232.43
95th-Percentile Queue Length [veh]	8.14	8.38	6.16	3.26	8.80	9.42	11.09	13.67	14.30
95th-Percentile Queue Length [ft]	203.49	209.38	154.02	81.55	219.99	235.38	277.37	341.64	357.45

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.20	31.86	30.11	42.52	0.00	15.38	40.31	14.08	0.00	0.00	36.09	38.74
Movement LOS	C	C	C	D		B	D	B			D	D
d_A, Approach Delay [s/veh]	32.10			19.82			17.43			36.14		
Approach LOS	C			B			B			D		
d_I, Intersection Delay [s/veh]	26.22											
Intersection LOS	C											
Intersection V/C	1.023											

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Ramona Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

**Intersection Setup**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	120.00	100.00	100.00	200.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramona Ave			Ramona Ave			Grand Ave			Edison Ave		
Base Volume Input [veh/h]	61	472	57	38	437	122	87	905	106	53	742	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	1	0	0	0	64	0	2	203	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	379	0	0	270	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	472	58	39	437	122	76	1248	92	48	1133	44
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	124	15	10	115	32	20	328	24	13	298	12
Total Analysis Volume [veh/h]	64	497	61	41	460	128	80	1314	97	51	1193	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	10	21	0	10	21	0	23	39	10	10	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	6	21	21	5	20	20	7	40	48	6	39	39
g / C, Green / Cycle	0.08	0.27	0.27	0.07	0.26	0.26	0.09	0.50	0.60	0.07	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.05	0.18	0.05	0.03	0.20	0.21	0.06	0.46	0.04	0.04	0.42	0.42
s, saturation flow rate [veh/h]	1416	2831	1264	1416	1487	1377	1416	2831	2237	1416	1487	1468
c, Capacity [veh/h]	107	750	335	93	379	351	123	1414	1280	100	718	709
d1, Uniform Delay [s]	35.82	26.22	22.72	35.98	27.91	27.98	35.37	18.70	7.65	35.86	18.39	18.41
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.12	0.11	0.50	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.31	1.01	0.26	3.29	4.27	4.95	5.73	12.12	0.02	4.02	13.38	13.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.60	0.66	0.18	0.44	0.80	0.81	0.65	0.93	0.08	0.51	0.87	0.87
d, Delay for Lane Group [s/veh]	41.13	27.24	22.98	39.27	32.19	32.93	41.10	30.82	7.68	39.88	31.77	32.04
Lane Group LOS	D	C	C	D	C	C	D	C	A	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.31	4.02	0.86	0.82	5.50	5.21	1.64	11.92	0.32	1.03	11.39	11.31
50th-Percentile Queue Length [ft]	32.78	100.54	21.42	20.52	137.42	130.31	40.88	298.02	7.93	25.70	284.64	282.68
95th-Percentile Queue Length [veh]	2.36	7.24	1.54	1.48	9.34	8.96	2.94	17.58	0.57	1.85	16.92	16.82
95th-Percentile Queue Length [ft]	59.01	180.97	38.56	36.94	233.55	223.92	73.59	439.58	14.27	46.26	422.99	420.55

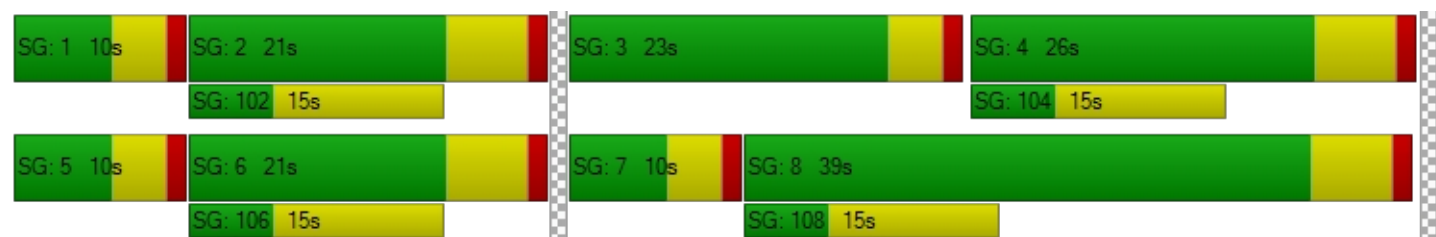


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	41.13	27.24	22.98	39.27	32.44	32.93	41.10	30.82	7.68	39.88	31.90	32.04
Movement LOS	D	C	C	D	C	C	D	C	A	D	C	C
d_A, Approach Delay [s/veh]	28.25			32.98			29.86			32.22		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	30.86											
Intersection LOS	C											
Intersection V/C	0.752											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Central Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	48.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.869

**Intersection Setup**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	2	0	0	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	100.00	250.00	100.00	100.00	250.00	100.00	150.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Central Ave			Central Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	70	844	366	81	708	152	242	680	103	241	454	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	0.87	0.87	0.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	1	0	0	0	67	0	3	211	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	379	0	0	270	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	844	367	82	708	152	211	1056	90	213	890	64
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	222	97	22	186	40	56	278	24	56	234	17
Total Analysis Volume [veh/h]	74	888	386	86	745	160	222	1112	95	224	937	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	31	0	10	31	0	17	39	0	10	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	29	29	8	30	30	15	37	37	8	30	30
g / C, Green / Cycle	0.08	0.32	0.32	0.09	0.33	0.33	0.17	0.41	0.41	0.09	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.05	0.31	0.31	0.06	0.26	0.13	0.16	0.41	0.41	0.08	0.33	0.05
s, saturation flow rate [veh/h]	1416	2831	1264	1416	2831	1264	1416	1487	1446	2750	2831	1264
c, Capacity [veh/h]	111	916	409	123	940	420	237	611	595	247	944	421
d1, Uniform Delay [s]	40.36	30.01	29.65	39.96	27.24	22.98	36.98	26.47	26.50	40.58	29.90	21.12
k, delay calibration	0.11	0.11	0.39	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.82	8.39	27.60	7.04	1.55	0.57	15.46	35.92	37.91	11.91	27.66	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

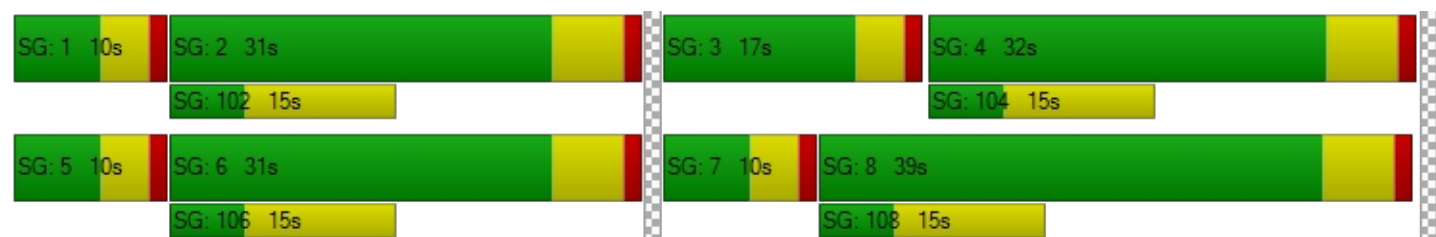
X, volume / capacity	0.67	0.97	0.94	0.70	0.79	0.38	0.94	1.00	1.00	0.91	0.99	0.16
d, Delay for Lane Group [s/veh]	47.17	38.40	57.25	47.00	28.79	23.55	52.44	62.39	64.41	52.49	57.56	21.93
Lane Group LOS	D	D	E	D	C	C	D	E	F	D	E	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.75	9.84	10.67	2.03	6.94	2.51	5.62	17.88	17.76	2.78	12.96	1.04
50th-Percentile Queue Length [ft]	43.74	246.04	266.81	50.63	173.57	62.72	140.48	447.12	444.06	69.40	324.12	25.95
95th-Percentile Queue Length [veh]	3.15	14.99	16.03	3.65	11.26	4.52	9.51	24.82	24.75	5.00	18.87	1.87
95th-Percentile Queue Length [ft]	78.73	374.66	400.75	91.14	281.61	112.90	237.68	620.51	618.65	124.93	471.74	46.71

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	47.17	38.40	57.25	47.00	28.79	23.55	52.44	63.30	64.41	52.49	57.56	21.93
Movement LOS	D	D	E	D	C	C	D	E	E	D	E	C
d_A, Approach Delay [s/veh]	44.28			29.52			61.69			54.69		
Approach LOS	D			C			E			D		
d_I, Intersection Delay [s/veh]	48.89											
Intersection LOS	D											
Intersection V/C	0.869											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Mountain Ave/ Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

**Intersection Setup**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	300.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Mountain Ave			Mountain Ave			Edison Ave					
Base Volume Input [veh/h]	28	74	30	85	97	108	137	901	37	24	386	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.11	1.11	1.11	1.11	1.11	1.11
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	1	0	0	0	70	0	3	221	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	18	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	379	0	0	270	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	74	31	86	97	108	152	1467	41	30	933	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	19	8	23	26	28	40	386	11	8	246	15
Total Analysis Volume [veh/h]	29	78	33	91	102	114	160	1544	43	32	982	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	21	0	18	29	0	10	21	0	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	9	9	7	11	11	11	42	42	5	36	36
g / C, Green / Cycle	0.06	0.12	0.12	0.10	0.16	0.16	0.15	0.60	0.60	0.06	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.03	0.06	0.07	0.09	0.11	0.37	0.37	0.02	0.24	0.24
s, saturation flow rate [veh/h]	1416	1487	1264	1416	1487	1264	1416	2831	1466	1416	2831	1443
c, Capacity [veh/h]	89	185	157	137	235	200	215	1699	880	92	1452	740
d1, Uniform Delay [s]	31.40	28.33	27.56	30.53	26.63	27.26	28.38	8.88	8.88	31.31	10.98	10.99
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	1.53	0.66	5.46	1.26	2.55	5.02	1.68	3.22	2.24	1.12	2.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.33	0.42	0.21	0.67	0.43	0.57	0.74	0.62	0.62	0.35	0.48	0.48
d, Delay for Lane Group [s/veh]	33.51	29.86	28.22	35.99	27.89	29.81	33.40	10.55	12.10	33.55	12.10	13.18
Lane Group LOS	C	C	C	D	C	C	C	B	B	C	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.49	1.21	0.49	1.59	1.51	1.78	2.67	4.06	4.58	0.54	3.02	3.31
50th-Percentile Queue Length [ft]	12.33	30.15	12.32	39.80	37.76	44.39	66.80	101.49	114.62	13.58	75.50	82.68
95th-Percentile Queue Length [veh]	0.89	2.17	0.89	2.87	2.72	3.20	4.81	7.31	8.10	0.98	5.44	5.95
95th-Percentile Queue Length [ft]	22.19	54.27	22.18	71.63	67.97	79.90	120.24	182.69	202.41	24.45	135.91	148.82



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.51	29.86	28.22	35.99	27.89	29.81	33.40	11.05	12.10	33.55	12.42	13.18
Movement LOS	C	C	C	D	C	C	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	30.23			31.01			13.12			13.09		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.52											
Intersection LOS	B											
Intersection V/C	0.509											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 26: Euclid Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.864

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	130.00	100.00	50.00	155.00	100.00	200.00	200.00	100.00	100.00	65.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	99	902	55	61	865	111	216	371	159	34	172	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34	1.11	1.11	1.11	1.11	1.11	1.11
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	138	23	0	2	7	0	0	29	44	0	93	5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	14	19	0	0	23	0	0	0	18	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	81	809	4	3	251	0	0	362	40	3	246	2
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	366	2060	78	87	1440	149	240	803	278	41	530	47
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	96	542	21	23	379	39	63	211	73	11	139	12
Total Analysis Volume [veh/h]	385	2168	82	92	1516	157	253	845	293	43	558	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	28	0	10	27	0	0	22	0	0	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	9	28	28	6	25	25	20	20	20	20	20	20
g / C, Green / Cycle	0.15	0.46	0.46	0.10	0.42	0.42	0.33	0.33	0.33	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.12	0.47	0.06	0.06	0.33	0.11	0.33	0.24	0.24	0.10	0.12	0.03
s, saturation flow rate [veh/h]	3101	4567	1425	1597	4567	1425	763	3192	1465	443	4567	1425
c, Capacity [veh/h]	465	2113	659	166	1903	594	291	1064	488	166	1522	475
d1, Uniform Delay [s]	24.75	16.12	9.19	25.56	15.28	11.47	25.45	17.64	17.65	26.73	15.19	13.81
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.20	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.83	26.54	0.39	2.87	3.57	1.09	13.60	1.00	2.15	0.82	0.15	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

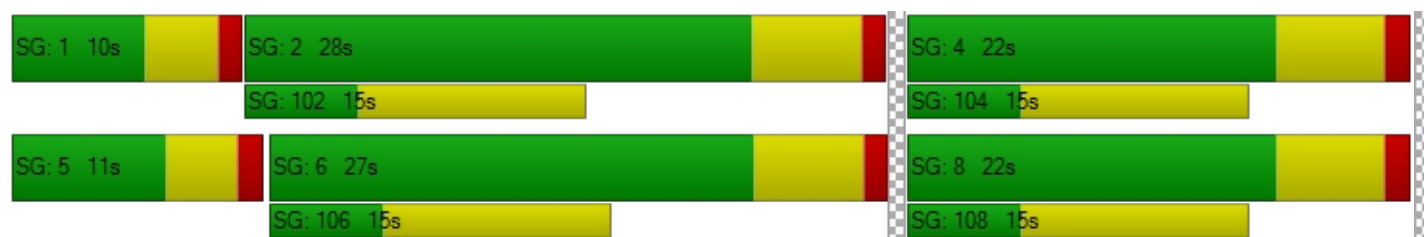
X, volume / capacity	0.83	1.03	0.12	0.55	0.80	0.26	0.87	0.73	0.73	0.26	0.37	0.10
d, Delay for Lane Group [s/veh]	28.58	42.66	9.58	28.43	18.85	12.56	39.05	18.64	19.80	27.55	15.34	13.90
Lane Group LOS	C	F	A	C	B	B	D	B	B	C	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	2.63	12.53	0.56	1.27	5.46	1.31	4.47	4.16	3.98	0.59	1.67	0.41
50th-Percentile Queue Length [ft]	65.69	313.35	13.96	31.65	136.46	32.64	111.79	103.97	99.38	14.77	41.70	10.17
95th-Percentile Queue Length [veh]	4.73	18.67	1.00	2.28	9.29	2.35	7.94	7.49	7.16	1.06	3.00	0.73
95th-Percentile Queue Length [ft]	118.24	466.84	25.12	56.97	232.24	58.75	198.48	187.15	178.89	26.58	75.06	18.31

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.58	42.66	9.58	28.43	18.85	12.56	39.05	18.73	19.80	27.55	15.34	13.90
Movement LOS	C	F	A	C	B	B	D	B	B	C	B	B
d_A, Approach Delay [s/veh]	39.57			18.79			22.65			16.04		
Approach LOS	D			B			C			B		
d_I, Intersection Delay [s/veh]	27.85											
Intersection LOS	C											
Intersection V/C	0.864											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 27: Grove Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	11.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.308

**Intersection Setup**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↵			↵ ↑ ↵			↵ ↑ ↑ ↑ ↵			↵ ↑ ↑ ↑ ↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Grove Ave			Grove Ave			Edison Ave			Edison Ave		
Base Volume Input [veh/h]	12	177	52	61	173	33	48	401	17	28	189	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	98	90	0	0	29	0	0	0	31	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	16	3	21	0	0	411	0	14	282	2
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	397	95	95	311	50	48	812	48	42	471	19
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	104	25	25	82	13	13	214	13	11	124	5
Total Analysis Volume [veh/h]	122	418	100	100	327	53	51	855	51	44	496	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	31	0	0	31	0	0	29	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	29	29	29	29	29	29	27	27	27	27	27	27
g / C, Green / Cycle	0.48	0.48	0.48	0.48	0.48	0.48	0.45	0.45	0.45	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.14	0.16	0.16	0.13	0.12	0.12	0.06	0.15	0.15	0.08	0.08	0.08
s, saturation flow rate [veh/h]	899	1676	1566	792	1676	1596	793	4567	1615	552	4567	1634
c, Capacity [veh/h]	478	810	757	411	810	772	424	2055	727	307	2055	736
d1, Uniform Delay [s]	12.57	9.52	9.54	13.72	9.05	9.07	12.21	10.63	10.65	14.28	9.90	9.91
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.29	1.09	1.18	1.40	0.70	0.74	0.58	0.42	1.20	0.98	0.20	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.26	0.33	0.33	0.24	0.24	0.24	0.12	0.32	0.33	0.14	0.18	0.19
d, Delay for Lane Group [s/veh]	13.85	10.61	10.71	15.12	9.75	9.81	12.79	11.05	11.85	15.26	10.09	10.47
Lane Group LOS	B	B	B	B	A	A	B	B	B	B	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.05	1.77	1.69	0.93	1.21	1.18	0.45	1.60	1.87	0.45	0.84	0.99
50th-Percentile Queue Length [ft]	26.27	44.33	42.22	23.29	30.26	29.42	11.17	39.98	46.83	11.29	21.00	24.71
95th-Percentile Queue Length [veh]	1.89	3.19	3.04	1.68	2.18	2.12	0.80	2.88	3.37	0.81	1.51	1.78
95th-Percentile Queue Length [ft]	47.29	79.80	76.00	41.92	54.47	52.95	20.11	71.97	84.30	20.32	37.80	44.47

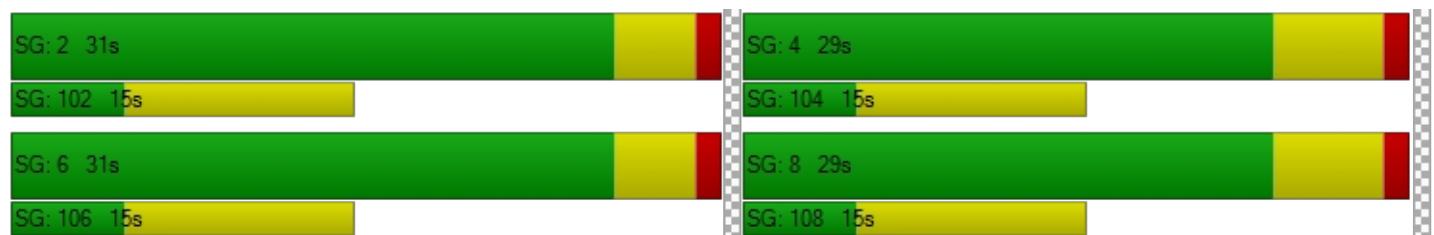


**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.85	10.65	10.71	15.12	9.77	9.81	12.79	11.22	11.85	15.26	10.18	10.47
Movement LOS	B	B	B	B	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	11.27			10.89			11.34			10.59		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	11.08											
Intersection LOS	B											
Intersection V/C	0.308											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 28: Archibald Ave / Edison Ave**

Control Type:	Signalized	Delay (sec / veh):	47.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.908

**Intersection Setup**

Name	Archibald Ave			Edison Ave			Edison Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	19.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	500.00	100.00	280.00	100.00	100.00	100.00	250.00	100.00	300.00	470.00	100.00	100.00
Speed [mph]	40.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Edison Ave			Edison Ave					
Base Volume Input [veh/h]	43	544	164	36	812	52	97	314	115	256	145	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	144	117	0	45	0	0	0	0	37	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	7	6	0	11	0	0	0	0	8	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	307	1390	425	16	1194	117	96	358	325	298	271	12
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	341	1965	676	44	1883	158	193	672	440	599	416	47
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	517	178	12	496	42	51	177	116	158	109	12
Total Analysis Volume [veh/h]	359	2068	712	46	1982	166	203	707	463	631	438	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	3.2	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	53	25	11	48	0	25	21	16	25	21	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	14	54	6	46	46	11	19	23	31	31
g / C, Green / Cycle	0.13	0.49	0.06	0.42	0.42	0.10	0.17	0.21	0.29	0.29
(v / s)_j Volume / Saturation Flow Rate	0.12	0.45	0.01	0.43	0.12	0.07	0.15	0.20	0.10	0.03
s, saturation flow rate [veh/h]	3101	4567	3101	4567	1425	3101	4567	3101	4567	1425
c, Capacity [veh/h]	395	2225	181	1910	596	301	789	648	1300	406
d1, Uniform Delay [s]	47.38	26.44	49.51	32.00	21.07	47.97	44.54	43.19	31.13	29.15
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.25	8.44	0.73	31.16	1.16	2.62	3.93	11.28	0.15	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.91	0.93	0.25	1.04	0.28	0.67	0.90	0.97	0.34	0.12
d, Delay for Lane Group [s/veh]	55.63	34.88	50.24	63.16	22.24	50.59	48.47	54.47	31.28	29.28
Lane Group LOS	E	C	D	F	C	D	D	D	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	5.19	17.27	0.61	21.06	2.86	2.72	6.34	9.18	2.97	0.94
50th-Percentile Queue Length [ft]	129.71	431.71	15.18	526.50	71.57	68.01	158.53	229.40	74.24	23.55
95th-Percentile Queue Length [veh]	8.92	24.08	1.09	29.36	5.15	4.90	10.47	14.14	5.34	1.70
95th-Percentile Queue Length [ft]	223.09	602.09	27.32	734.11	128.82	122.42	261.78	353.59	133.62	42.40

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	55.63	34.88	0.00	50.24	63.16	22.24	50.59	48.47	0.00	54.47	31.28	29.28
Movement LOS	E	C		D	F	C	D	D		D	C	C
d_A, Approach Delay [s/veh]	37.95			59.79			48.94			44.28		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	47.73											
Intersection LOS	D											
Intersection V/C	0.908											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 29: Milliken Ave / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	65.2
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

**Intersection Setup**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	150.00	100.00	150.00	240.00	100.00	240.00	290.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Milliken Ave			Milliken Ave			Edison Ave			Cantu-Galleano Ranch Rd		
Base Volume Input [veh/h]	70	241	141	281	374	39	28	355	179	296	295	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.12	1.12	1.12	0.72	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	117	0	0	37	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	12	0	0	17	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	34	450	427	175	395	208	109	1534	81	269	1758	196
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	104	691	568	456	769	247	140	2061	281	482	2024	247
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	182	149	120	202	65	37	542	74	127	533	65
Total Analysis Volume [veh/h]	109	727	598	480	809	260	147	2169	296	507	2131	260
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	10	21	16	14	25	10	10	39	10	16	45	14
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	8	19	35	12	23	33	8	37	47	14	43	57
g / C, Green / Cycle	0.09	0.21	0.39	0.13	0.26	0.37	0.09	0.41	0.52	0.16	0.48	0.63
(v / s)_i Volume / Saturation Flow Rate	0.04	0.23	0.42	0.15	0.18	0.18	0.05	0.47	0.21	0.16	0.47	0.18
s, saturation flow rate [veh/h]	3101	3192	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	276	674	519	413	1167	488	276	1877	709	482	2182	868
d1, Uniform Delay [s]	38.72	35.50	28.60	39.00	30.31	23.82	39.21	26.50	14.33	38.00	23.01	8.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.12	0.11	0.11	0.17	0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.92	57.88	88.47	78.71	3.40	0.99	1.60	71.40	0.63	34.18	5.04	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.40	1.08	1.15	1.16	0.69	0.53	0.53	1.16	0.42	1.05	0.98	0.30
d, Delay for Lane Group [s/veh]	39.64	93.38	117.07	117.71	33.71	24.81	40.82	97.90	14.96	72.18	28.05	8.63
Lane Group LOS	D	F	F	F	C	C	D	F	B	F	C	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	1.13	12.42	23.02	8.89	5.37	4.30	1.56	24.51	3.57	7.37	13.96	2.10
50th-Percentile Queue Length [ft]	28.33	310.38	575.45	222.28	134.32	107.57	39.03	612.74	89.20	184.14	349.03	52.47
95th-Percentile Queue Length [veh]	2.04	18.93	33.86	14.63	9.17	7.70	2.81	35.93	6.42	12.08	20.09	3.78
95th-Percentile Queue Length [ft]	51.00	473.16	846.56	365.81	229.36	192.62	70.26	898.15	160.57	301.96	502.22	94.44



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.64	93.38	117.07	117.71	33.71	24.81	40.82	97.90	14.96	72.18	28.05	8.63
Movement LOS	D	F	F	F	C	C	D	F	B	F	C	A
d_A, Approach Delay [s/veh]	99.17			58.25			85.29			34.03		
Approach LOS	F			E			F			C		
d_I, Intersection Delay [s/veh]	65.21											
Intersection LOS	E											
Intersection V/C	0.863											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 30: I-15 SB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	7.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.690

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				⇐⇐⇐			⇐⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	0	0	0	318	0	500	0	495	308	0	198	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.72	1.00	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	34	0	117	0	0	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	15	0	12	0	0	2	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	1044	0	2041	376	0	1133	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	318	0	1593	0	2526	598	0	1281	130
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	1.0000	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	84	0	419	0	665	157	0	337	34
Total Analysis Volume [veh/h]	0	0	0	335	0	1677	0	2659	629	0	1348	137
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal group	0	0	0	1	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	5	0	0	0	5	0	0	5	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	4.4	0.0	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	37	0	0	0	23	0	0	23	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	10	0	0	0	10	0	0	10	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	C
C, Cycle Length [s]		60	60	60
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00
g_i, Effective Green Time [s]		11	45	45
g / C, Green / Cycle		0.19	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate		0.11	0.58	0.42
s, saturation flow rate [veh/h]		3101	4567	3192
c, Capacity [veh/h]		589	3395	2373
d1, Uniform Delay [s]		22.07	4.73	3.42
k, delay calibration		0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00
d2, Incremental Delay [s]		0.87	1.88	0.99
d3, Initial Queue Delay [s]		0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity		0.57	0.78	0.57
d, Delay for Lane Group [s/veh]		22.94	6.61	4.41
Lane Group LOS		C	A	A
Critical Lane Group		Yes	Yes	No
50th-Percentile Queue Length [veh]		2.07	3.49	1.92
50th-Percentile Queue Length [ft]		51.74	87.20	48.01
95th-Percentile Queue Length [veh]		3.73	6.28	3.46
95th-Percentile Queue Length [ft]		93.14	156.96	86.41

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	22.94	0.00	0.00	0.00	6.61	0.00	0.00	4.41	0.00
Movement LOS				C				A			A	
d_A, Approach Delay [s/veh]	0.00			22.94			6.61			4.41		
Approach LOS	A			C			A			A		
d_I, Intersection Delay [s/veh]	7.19											
Intersection LOS	A											
Intersection V/C	0.690											

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 31: I-15 NB Ramp / Cantu-Galleano Ranch Rd**

Control Type:	Signalized	Delay (sec / veh):	64.3
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.313

**Intersection Setup**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	260.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

**Volumes**

Name	Ramp		Cantu-Galleano Ranch Rd		Cantu-Galleano Ranch Rd	
Base Volume Input [veh/h]	95	81	468	380	241	272
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	0.72	0.72	0.72	0.72
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	9	108	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	2	10	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	551	0	729	1262	0	582
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	646	81	1077	1654	174	783
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	170	21	283	435	46	206
Total Analysis Volume [veh/h]	680	85	1134	1741	183	824
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Overlap	Permissive	Permissive
Signal group	5	0	8	5	0	4
Auxiliary Signal Groups				5,8		
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	5	0	5
Maximum Green [s]	30	0	30	30	0	30
Amber [s]	4.4	0.0	4.8	4.4	0.0	4.8
All red [s]	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	25	0	55	25	0	55
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	5	0	5	5	0	5
Pedestrian Clearance [s]	10	0	10	10	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	1.0	0.0	1.0
Minimum Recall	No		No	No		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	C	R	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	0.00	1.00	1.00
g_i, Effective Green Time [s]	23	23	23	53	78	53	53
g / C, Green / Cycle	0.29	0.29	0.29	0.66	0.98	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.21	0.21	0.06	0.25	1.22	0.21	0.18
s, saturation flow rate [veh/h]	1597	1597	1425	4567	1425	864	4567
c, Capacity [veh/h]	459	459	410	3025	1322	557	3025
d1, Uniform Delay [s]	25.80	25.80	21.59	6.06	2.90	10.73	5.56
k, delay calibration	0.13	0.13	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.92	2.92	0.25	0.36	148.21	1.58	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.74	0.74	0.21	0.37	1.32	0.33	0.27
d, Delay for Lane Group [s/veh]	28.72	28.72	21.84	6.42	151.11	12.31	5.78
Lane Group LOS	C	C	C	A	F	B	A
Critical Lane Group	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	5.97	5.97	1.20	2.42	54.41	0.97	1.61
50th-Percentile Queue Length [ft]	149.14	149.14	29.97	60.52	1360.34	24.33	40.23
95th-Percentile Queue Length [veh]	9.97	9.97	2.16	4.36	83.64	1.75	2.90
95th-Percentile Queue Length [ft]	249.28	249.28	53.94	108.94	2090.99	43.80	72.42



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.72	21.84	6.42	151.11	12.31	5.78
Movement LOS	C	C	A	F	B	A
d_A, Approach Delay [s/veh]	27.95		94.04		6.97	
Approach LOS	C		F		A	
d_I, Intersection Delay [s/veh]	64.29					
Intersection LOS	E					
Intersection V/C	0.313					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 32: Euclid Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	20.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	210.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	98	980	8	15	1018	49	46	42	185	0	6	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	41	0	40	10	0	0	1	0	0	2	120
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	33	0	0	41	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	52	859	0	54	240	0	0	8	48	0	5	34
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	2295	11	115	1706	68	46	51	233	0	13	162
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	604	3	30	449	18	12	13	61	0	3	43
Total Analysis Volume [veh/h]	198	2416	12	121	1796	72	48	54	245	0	14	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	12	22	0	17	27	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	10	33	33	7	30	30	14	14	14	14	14	14
g / C, Green / Cycle	0.17	0.54	0.54	0.12	0.49	0.49	0.24	0.24	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.12	0.39	0.39	0.08	0.30	0.30	0.04	0.03	0.17	0.00	0.01	0.12
s, saturation flow rate [veh/h]	1597	4567	1671	1597	4567	1634	1074	1676	1482	968	1676	1425
c, Capacity [veh/h]	266	2477	906	190	2259	808	255	401	354	197	401	341
d1, Uniform Delay [s]	23.80	10.29	10.29	25.21	10.96	10.96	24.02	17.95	20.82	0.00	17.52	19.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.14	1.82	4.87	3.55	1.23	3.40	0.35	0.15	2.42	0.00	0.04	1.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

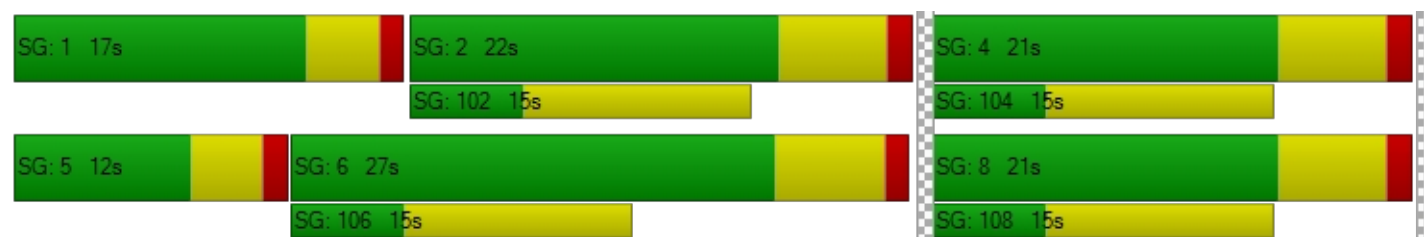
X, volume / capacity	0.75	0.72	0.72	0.64	0.61	0.61	0.19	0.13	0.69	0.00	0.03	0.50
d, Delay for Lane Group [s/veh]	27.93	12.11	15.16	28.76	12.20	14.37	24.38	18.10	23.24	0.00	17.56	20.89
Lane Group LOS	C	B	B	C	B	B	C	B	C	A	B	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	2.79	5.01	6.27	1.68	3.61	4.36	0.59	0.54	2.98	0.00	0.14	1.92
50th-Percentile Queue Length [ft]	69.84	125.34	156.86	41.90	90.21	109.04	14.72	13.43	74.39	0.00	3.39	48.01
95th-Percentile Queue Length [veh]	5.03	8.69	10.38	3.02	6.50	7.79	1.06	0.97	5.36	0.00	0.24	3.46
95th-Percentile Queue Length [ft]	125.71	217.14	259.55	75.43	162.38	194.66	26.49	24.17	133.90	0.00	6.10	86.42

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.93	12.92	15.16	28.76	12.70	14.37	24.38	18.10	23.24	0.00	17.56	20.89
Movement LOS	C	B	B	C	B	B	C	B	C	A	B	C
d_A, Approach Delay [s/veh]	14.06			13.74			22.60			20.64		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	14.75											
Intersection LOS	B											
Intersection V/C	0.630											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 33: Grove Ave / Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	10.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.233

**Intersection Setup**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Grove Ave			Grove Ave			Eucalyptus Ave			Eucalyptus Ave		
Base Volume Input [veh/h]	2	208	0	3	197	8	27	0	21	1	3	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	33	0	52	9	0	0	40	1	0	119	155
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	87	30	0	49	0	0	62	0	30	39	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	328	30	55	255	8	27	102	22	31	161	160
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	86	8	14	67	2	7	27	6	8	42	42
Total Analysis Volume [veh/h]	5	345	32	58	268	8	28	107	23	33	169	168
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	10	0	0	10	0	0	50	0	0	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	43	43	43	43	43	43	13	13	13	13	13	13
g / C, Green / Cycle	0.71	0.71	0.71	0.71	0.71	0.71	0.22	0.22	0.22	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.01	0.11	0.11	0.06	0.08	0.08	0.03	0.04	0.04	0.03	0.10	0.12
s, saturation flow rate [veh/h]	989	1676	1627	901	1676	1659	935	1676	1577	1130	1676	1425
c, Capacity [veh/h]	783	1190	1155	715	1190	1178	212	375	353	312	375	319
d1, Uniform Delay [s]	3.27	2.85	2.85	3.71	2.75	2.76	25.13	18.82	18.86	21.30	20.11	20.50
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.29	0.30	0.22	0.20	0.20	0.28	0.22	0.25	0.15	0.85	1.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.01	0.16	0.16	0.08	0.12	0.12	0.13	0.18	0.18	0.11	0.45	0.53
d, Delay for Lane Group [s/veh]	3.28	3.14	3.15	3.93	2.95	2.96	25.40	19.04	19.10	21.44	20.96	21.86
Lane Group LOS	A	A	A	A	A	A	C	B	B	C	C	C
Critical Lane Group	No	No	Yes	No	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.01	0.42	0.42	0.19	0.30	0.29	0.35	0.68	0.67	0.37	1.89	1.94
50th-Percentile Queue Length [ft]	0.35	10.55	10.44	4.76	7.39	7.37	8.82	16.92	16.68	9.22	47.22	48.60
95th-Percentile Queue Length [veh]	0.03	0.76	0.75	0.34	0.53	0.53	0.64	1.22	1.20	0.66	3.40	3.50
95th-Percentile Queue Length [ft]	0.64	18.99	18.79	8.56	13.30	13.26	15.88	30.46	30.02	16.60	84.99	87.49



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	3.28	3.15	3.15	3.93	2.96	2.96	25.40	19.07	19.10	21.44	20.96	21.86
Movement LOS	A	A	A	A	A	A	C	B	B	C	C	C
d_A, Approach Delay [s/veh]	3.15			3.13			20.19			21.41		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	10.74											
Intersection LOS	B											
Intersection V/C	0.233											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 34: Carpenter Ave / Eucalyptus Ave**

Control Type:	Two-way stop	Delay (sec / veh):	13.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.128

**Intersection Setup**

Name	Eucalyptus Ave					
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↵↵		↑↑		↵↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		30.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Eucalyptus Ave					
Base Volume Input [veh/h]	9	4	1	6	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	54	49	74	18	35	219
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	4	0	0	6	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	82	0	0	69
Total Hourly Volume [veh/h]	63	57	157	24	41	288
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	15	41	6	11	76
Total Analysis Volume [veh/h]	66	60	165	25	43	303
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.13	0.07	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	13.01	9.27	0.00	0.00	7.88	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.44	0.21	0.00	0.00	0.10	0.00
95th-Percentile Queue Length [ft]	10.93	5.33	0.00	0.00	2.58	0.00
d_A, Approach Delay [s/veh]	11.23		0.00		0.98	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.65					
Intersection LOS	B					

**Intersection Level Of Service Report  
Intersection 35: Euclid Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	42.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	18.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	0	0	0	1	0	1
Pocket Length [ft]	120.00	100.00	80.00	150.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Merrill Ave			Merrill Ave		
Base Volume Input [veh/h]	1	1045	159	239	851	1	17	37	7	116	1	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	25	10	0	0	0	0	0	81	1	41
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	7	41	0	0	0	0	0	6	0	33
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	21	161	184	74	0	0	0	0	414	0	696
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	1474	414	567	1257	1	17	37	7	617	2	871
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	388	109	149	331	0	4	10	2	162	1	229
Total Analysis Volume [veh/h]	1	1552	436	597	1323	1	18	39	7	649	2	917
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	0.0	0.0	5.2	0.0	0.0	5.2	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Split [s]	11	25	0	16	30	0	0	29	0	0	29	16
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	2	23	23	14	35	35	27	27	27	43
g / C, Green / Cycle	0.03	0.33	0.33	0.20	0.50	0.50	0.39	0.39	0.39	0.61
(v / s)_i Volume / Saturation Flow Rate	0.00	0.34	0.31	0.19	0.21	0.21	0.04	0.27	0.00	0.64
s, saturation flow rate [veh/h]	1597	4567	1425	3101	4567	1676	1597	2367	1676	1425
c, Capacity [veh/h]	55	1500	468	620	2257	828	682	926	647	831
d1, Uniform Delay [s]	32.66	23.50	22.73	27.74	11.36	11.36	13.72	20.52	13.22	14.60
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	32.58	27.54	10.10	0.60	1.62	0.06	0.98	0.00	63.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.02	1.03	0.93	0.96	0.43	0.43	0.09	0.70	0.00	1.10
d, Delay for Lane Group [s/veh]	32.79	56.08	50.27	37.84	11.96	12.98	13.78	21.50	13.22	78.32
Lane Group LOS	C	F	D	D	B	B	B	C	B	F
Critical Lane Group	No	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.02	11.77	9.69	5.39	2.78	3.30	0.58	4.51	0.02	25.11
50th-Percentile Queue Length [ft]	0.44	294.15	242.16	134.67	69.52	82.43	14.59	112.69	0.46	627.73
95th-Percentile Queue Length [veh]	0.03	17.76	14.79	9.19	5.01	5.93	1.05	7.99	0.03	36.04
95th-Percentile Queue Length [ft]	0.79	443.92	369.77	229.83	125.14	148.37	26.25	199.74	0.83	901.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	32.79	56.08	50.27	37.84	12.23	12.98	13.78	13.78	13.78	21.50	13.22	78.32
Movement LOS	C	F	D	D	B	B	B	B	B	C	B	F
d_A, Approach Delay [s/veh]	54.80			20.19			13.78			54.72		
Approach LOS	D			C			B			D		
d_I, Intersection Delay [s/veh]	42.31											
Intersection LOS	D											
Intersection V/C	0.589											

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 36: Grove Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	9.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

**Intersection Setup**

Name	Northbound			Grove Ave Southbound			Merill Ave Eastbound			Merill Ave Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Northbound			Grove Ave			Merill Ave			Merill Ave		
Base Volume Input [veh/h]	0	0	0	145	0	75	106	350	0	0	100	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	2.00	15.00	2.00	2.00	2.00	15.00	15.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	9	0	0	0	35	0	0	123	36
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	48	0	0	39	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	12	0	38	9	23	30	384	0	0	1134	85
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	12	0	192	9	98	136	817	0	0	1396	217
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	0	51	2	26	36	215	0	0	367	57
Total Analysis Volume [veh/h]	0	13	0	202	9	103	143	860	0	0	1469	228
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.6	0.0	0.0	3.6	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	13	0	0	13	0	0	47	0	0	47	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	11	11	11	11	45	45	45	45	45	45
g / C, Green / Cycle	0.18	0.18	0.18	0.18	0.75	0.75	0.75	0.75	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.01	0.16	0.01	0.08	0.55	0.26	0.26	0.00	0.51	0.52
s, saturation flow rate [veh/h]	1487	1256	1487	1264	259	1676	1676	511	1676	1600
c, Capacity [veh/h]	333	320	273	232	241	1257	1257	450	1257	1200
d1, Uniform Delay [s]	20.18	25.25	20.13	21.78	18.15	2.52	2.52	0.00	3.84	3.95
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	2.05	0.05	1.34	10.32	0.74	0.74	0.00	3.01	3.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.04	0.63	0.03	0.44	0.59	0.34	0.34	0.00	0.68	0.70
d, Delay for Lane Group [s/veh]	20.23	27.30	20.18	23.12	28.47	3.26	3.26	0.00	6.84	7.35
Lane Group LOS	C	C	C	C	C	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	0.14	2.75	0.10	1.24	2.46	0.74	0.74	0.00	2.51	2.60
50th-Percentile Queue Length [ft]	3.48	68.76	2.42	30.95	61.51	18.47	18.47	0.00	62.63	65.02
95th-Percentile Queue Length [veh]	0.25	4.95	0.17	2.23	4.43	1.33	1.33	0.00	4.51	4.68
95th-Percentile Queue Length [ft]	6.26	123.77	4.35	55.71	110.72	33.24	33.24	0.00	112.73	117.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	20.23	20.23	20.23	27.30	20.18	23.12	28.47	3.26	3.26	0.00	7.06	7.35
Movement LOS	C	C	C	C	C	C	C	A	A	A	A	A
d_A, Approach Delay [s/veh]	20.23			25.72			6.86			7.10		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	9.01											
Intersection LOS	A											
Intersection V/C	0.712											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 37: Carpenter Ave / Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.644

**Intersection Setup**

Name	Carpenter Ave						Merrill Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Carpenter Ave						Merrill Ave					
Base Volume Input [veh/h]	25	1	15	6	1	0	2	552	8	1	165	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	38	0	42	13	32	0	0	117	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	3	0	7	9	39	0	0	32	4
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	104	0	350	0	0	0	0	298	49	174	164	4
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	129	1	365	47	1	49	24	921	57	175	478	24
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	0	96	12	0	13	6	242	15	46	126	6
Total Analysis Volume [veh/h]	136	1	384	49	1	52	25	969	60	184	503	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	4.4	0.0	0.0	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	28	0	0	28	0	0	32	0	0	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	20	20	20	20	20	20	36	36	36	36	36	36
g / C, Green / Cycle	0.33	0.33	0.33	0.33	0.33	0.33	0.60	0.60	0.60	0.60	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.11	0.00	0.27	0.05	0.00	0.04	0.03	0.31	0.31	0.37	0.16	0.16
s, saturation flow rate [veh/h]	1211	1676	1425	895	1676	1425	784	1676	1642	491	1676	1649
c, Capacity [veh/h]	489	563	478	203	563	478	506	1002	981	308	1002	985
d1, Uniform Delay [s]	16.34	13.24	18.12	26.10	13.24	13.74	8.01	7.04	7.04	18.32	5.78	5.78
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.31	0.00	3.31	0.61	0.00	0.10	0.19	1.92	1.96	8.32	0.65	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.28	0.00	0.80	0.24	0.00	0.11	0.05	0.52	0.52	0.60	0.27	0.27
d, Delay for Lane Group [s/veh]	16.64	13.24	21.42	26.70	13.24	13.84	8.20	8.96	9.00	26.65	6.42	6.44
Lane Group LOS	B	B	C	C	B	B	A	A	A	C	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.31	0.01	4.51	0.65	0.01	0.43	0.16	3.06	3.01	2.76	1.24	1.23
50th-Percentile Queue Length [ft]	32.69	0.20	112.77	16.13	0.20	10.78	3.96	76.58	75.30	68.90	31.05	30.65
95th-Percentile Queue Length [veh]	2.35	0.01	7.99	1.16	0.01	0.78	0.28	5.51	5.42	4.96	2.24	2.21
95th-Percentile Queue Length [ft]	58.84	0.36	199.85	29.04	0.36	19.40	7.12	137.84	135.54	124.02	55.89	55.18

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.64	13.24	21.42	26.70	13.24	13.84	8.20	8.98	9.00	26.65	6.43	6.44
Movement LOS	B	B	C	C	B	B	A	A	A	C	A	A
d_A, Approach Delay [s/veh]	20.16			20.01			8.96			11.66		
Approach LOS	C			C			A			B		
d_I, Intersection Delay [s/veh]	12.68											
Intersection LOS	B											
Intersection V/C	0.644											

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 38: Archibald Ave / Merill Ave**

Control Type:	Signalized	Delay (sec / veh):	65.8
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.956

**Intersection Setup**

Name	Archibald Ave			Archibald			Merill Ave			Merill Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Pocket Length [ft]	450.00	100.00	400.00	200.00	100.00	100.00	150.00	100.00	150.00	150.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

**Volumes**

Name	Archibald Ave			Archibald			Merill Ave			Merill Ave		
Base Volume Input [veh/h]	75	549	27	48	945	84	207	28	344	36	4	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	31	32	0	0	88	12	44	0	113	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	22	0	0	0	0	34	26	0	17	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	152	1473	6	90	1202	277	614	120	358	3	80	108
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	264	1933	27	127	2027	389	891	148	832	39	84	130
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	509	7	33	533	102	234	39	219	10	22	34
Total Analysis Volume [veh/h]	278	2035	28	134	2134	409	938	156	876	41	88	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.6	5.2	3.2	3.6	5.2	3.2	3.2	4.8	3.6	3.2	4.8	3.6
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	53	10	10	50	36	36	47	13	10	21	10
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	11	54	62	8	51	87	34	44	6	16	16
g / C, Green / Cycle	0.09	0.45	0.52	0.07	0.42	0.72	0.28	0.37	0.05	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.09	0.45	0.02	0.04	0.47	0.29	0.30	0.05	0.01	0.03	0.10
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	3192	3101	3192	1425
c, Capacity [veh/h]	284	2050	709	207	1936	1005	879	1172	156	429	192
d1, Uniform Delay [s]	54.38	32.87	15.44	54.63	34.57	7.30	43.00	25.25	54.82	46.23	49.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.14	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.10	18.23	0.10	3.39	54.52	1.22	37.63	0.05	0.88	0.23	4.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.98	0.99	0.04	0.65	1.10	0.41	1.07	0.13	0.26	0.21	0.72
d, Delay for Lane Group [s/veh]	74.48	51.10	15.55	58.02	89.09	8.52	80.63	25.30	55.70	46.46	54.64
Lane Group LOS	E	D	B	E	F	A	F	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	4.91	21.83	0.40	2.04	27.52	4.05	17.19	1.46	0.61	1.17	4.13
50th-Percentile Queue Length [ft]	122.67	545.75	10.09	51.06	688.08	101.15	429.71	36.60	15.19	29.23	103.28
95th-Percentile Queue Length [veh]	8.54	29.49	0.73	3.68	38.72	7.28	24.96	2.64	1.09	2.10	7.44
95th-Percentile Queue Length [ft]	213.50	737.31	18.15	91.90	968.04	182.07	623.94	65.89	27.35	52.62	185.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	74.48	51.10	15.55	58.02	89.09	8.52	80.63	25.30	0.00	55.70	46.46	54.64
Movement LOS	E	D	B	E	F	A	F	C		E	D	D
d_A, Approach Delay [s/veh]	53.45			75.22			72.74			52.10		
Approach LOS	D			E			E			D		
d_I, Intersection Delay [s/veh]	65.84											
Intersection LOS	E											
Intersection V/C	0.956											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 39: Archibald Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.953

**Intersection Setup**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	⇄		⇄		⇄⇄⇄	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	2	0	1	1
Pocket Length [ft]	100.00	350.00	250.00	100.00	200.00	100.00
Speed [mph]	50.00		50.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Archibald Ave		Archibald Ave		Limonite Ave	
Base Volume Input [veh/h]	399	272	562	757	246	258
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.55	0.55	0.55	0.55	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	0	148	54	0	46
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	8	0	10	7	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	896	499	699	820	331	623
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1140	649	1166	1297	577	941
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	300	171	307	341	152	248
Total Analysis Volume [veh/h]	1200	683	1227	1365	607	991
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	7	1	6	7	4
Auxiliary Signal Groups						1
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	5.2	3.6	3.2	4.8	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	22	29	29	51	29	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	5	0	5	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	20	20	27	49	27	27
g / C, Green / Cycle	0.25	0.25	0.34	0.61	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.24	0.24	0.36	0.27	0.18	0.35
s, saturation flow rate [veh/h]	5074	2803	3445	5074	3445	2803
c, Capacity [veh/h]	1269	701	1163	3108	1163	946
d1, Uniform Delay [s]	29.47	29.75	26.50	8.22	21.31	26.50
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.26	28.38	30.14	0.45	0.36	28.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

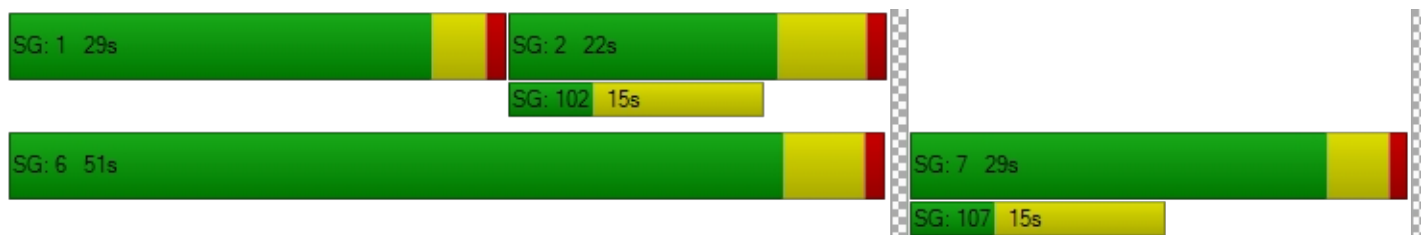
X, volume / capacity	0.95	0.97	1.06	0.44	0.52	1.05
d, Delay for Lane Group [s/veh]	44.73	58.14	56.64	8.67	21.68	54.83
Lane Group LOS	D	E	F	A	C	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	8.54	8.58	14.46	3.13	4.25	11.85
50th-Percentile Queue Length [ft]	213.44	214.38	361.44	78.24	106.33	296.20
95th-Percentile Queue Length [veh]	13.33	13.38	21.41	5.63	7.64	18.00
95th-Percentile Queue Length [ft]	333.23	334.44	535.19	140.82	190.88	450.06

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.73	58.14	56.64	8.67	21.68	54.83
Movement LOS	D	E	F	A	C	F
d_A, Approach Delay [s/veh]	49.59		31.38		42.23	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	39.88					
Intersection LOS	D					
Intersection V/C	0.953					

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 40: Hamner Ave / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	52.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.983

**Intersection Setup**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	200.00	250.00	100.00	250.00	250.00	100.00	420.00	300.00	100.00	200.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Hamner Ave			Hamner Ave			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	180	464	272	201	472	169	269	643	68	466	568	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.47	0.47	0.47	0.47
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	0	0	6	18	103	27	0	32	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	10	0	0	14	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	90	309	3	155	338	193	293	2119	175	9	1281	141
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	278	773	275	356	810	368	437	2534	234	228	1594	205
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	203	72	94	213	97	115	667	62	60	419	54
Total Analysis Volume [veh/h]	293	814	289	375	853	387	460	2667	246	240	1678	216
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	7	1	6	3	3	8	5	7	4	1
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2	3.2	4.8	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	22	11	16	25	21	21	61	13	11	51	16
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	11	20	31	14	23	44	19	59	72	9	49	65
g / C, Green / Cycle	0.10	0.18	0.28	0.13	0.21	0.40	0.17	0.54	0.65	0.08	0.45	0.59
(v / s)_i Volume / Saturation Flow Rate	0.09	0.18	0.20	0.12	0.19	0.27	0.15	0.58	0.17	0.08	0.37	0.15
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	310	830	373	395	955	542	536	2449	904	254	2034	814
d1, Uniform Delay [s]	49.20	44.80	37.59	47.65	42.31	29.02	44.20	25.50	8.88	50.26	26.74	11.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.45	0.11	0.11	0.18	0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.82	26.82	14.51	12.19	12.52	7.07	4.15	41.83	0.27	16.14	0.89	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.94	0.98	0.77	0.95	0.89	0.71	0.86	1.09	0.27	0.95	0.82	0.27
d, Delay for Lane Group [s/veh]	63.02	71.62	52.10	59.84	54.83	36.09	48.35	67.33	9.15	66.40	27.63	12.13
Lane Group LOS	E	E	D	E	D	D	D	F	A	E	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	4.50	9.21	8.47	5.64	8.39	9.36	6.23	28.56	2.40	3.78	12.20	2.53
50th-Percentile Queue Length [ft]	112.61	230.36	211.76	141.10	209.74	233.88	155.85	713.94	59.89	94.59	304.98	63.33
95th-Percentile Queue Length [veh]	7.99	14.19	13.24	9.54	13.14	14.37	10.33	39.88	4.31	6.81	17.93	4.56
95th-Percentile Queue Length [ft]	199.63	354.82	331.08	238.51	328.50	359.28	258.21	996.97	107.80	170.27	448.19	113.99

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	63.02	71.62	52.10	59.84	54.83	36.09	48.35	67.33	9.15	66.40	27.63	12.13
Movement LOS	E	E	D	E	D	D	D	F	A	E	C	B
d_A, Approach Delay [s/veh]	65.78			51.50			60.50			30.42		
Approach LOS	E			D			E			C		
d_I, Intersection Delay [s/veh]	52.12											
Intersection LOS	D											
Intersection V/C	0.983											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 41: I-15 SB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	157.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.582

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	2	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	0	0	0	170	0	586	0	1006	373	395	917	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.80	0.80	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	1	0	22	81	0	31	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	3	0	1	9	0	11	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	795	0	1413	1038	0	1014	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	170	0	1385	0	1909	1303	316	1790	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	45	0	364	0	502	343	83	471	0
Total Analysis Volume [veh/h]	0	0	0	179	0	1458	0	2009	1372	333	1884	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	5	0	0	5	0	5	5	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.8	0.0	3.2	4.8	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	36	0	0	64	0	10	74	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0	0	10	0	0	10	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]		34	34	34	62	62	8	72
g / C, Green / Cycle		0.31	0.31	0.31	0.56	0.56	0.07	0.65
(v / s)_i Volume / Saturation Flow Rate		0.11	0.51	0.51	0.44	0.96	0.11	0.41
s, saturation flow rate [veh/h]		1597	1425	1425	4567	1425	3101	4567
c, Capacity [veh/h]		494	440	440	2574	803	226	2989
d1, Uniform Delay [s]		29.57	38.00	38.00	18.70	24.00	51.00	11.17
k, delay calibration		0.11	0.50	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.45	304.79	304.79	2.43	324.01	219.73	1.02
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

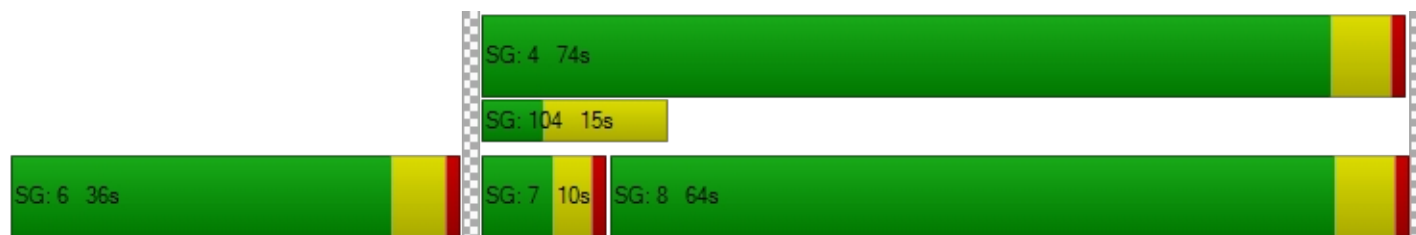
X, volume / capacity		0.36	1.66	1.66	0.78	1.71	1.48	0.63
d, Delay for Lane Group [s/veh]		30.02	342.79	342.79	21.13	348.01	270.73	12.19
Lane Group LOS		C	F	F	C	F	F	B
Critical Lane Group		No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]		3.64	48.62	48.62	12.53	90.69	9.92	8.00
50th-Percentile Queue Length [ft]		91.11	1215.51	1215.51	313.25	2267.17	248.03	199.96
95th-Percentile Queue Length [veh]		6.56	76.34	76.34	18.34	144.71	16.82	12.64
95th-Percentile Queue Length [ft]		164.00	1908.47	1908.47	458.38	3617.81	420.54	315.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	30.02	342.79	342.79	0.00	21.13	348.01	270.73	12.19	0.00
Movement LOS				C	F	F		C	F	F	B	
d_A, Approach Delay [s/veh]	0.00			308.59			153.77			51.03		
Approach LOS	A			F			F			D		
d_I, Intersection Delay [s/veh]	157.32											
Intersection LOS	F											
Intersection V/C	1.582											

**Sequence**

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 42: I-15 NB Ramp / Limonite Ave**

Control Type:	Signalized	Delay (sec / veh):	229.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.492

**Intersection Setup**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00	100.00	100.00	630.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Ramp			Ramp			Limonite Ave			Limonite Ave		
Base Volume Input [veh/h]	356	0	612	0	0	0	390	816	0	0	958	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	1.00	1.00	0.80	0.80
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	25	0	0	0	0	0	4	18	0	0	6	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	11	0	0	0	0	0	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1194	0	0	0	0	0	1430	744	0	0	859	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1586	0	612	0	0	0	1747	1415	0	0	1631	183
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	417	0	161	0	0	0	460	372	0	0	429	48
Total Analysis Volume [veh/h]	1669	0	644	0	0	0	1839	1489	0	0	1717	193
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	0	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	4.4	0.0	0.0	0.0	0.0	3.2	4.8	0.0	0.0	4.8	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	0	0	39	65	0	0	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	100	100	100		100	100	100	100
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00		1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	33	33	33		37	63	24	24
g / C, Green / Cycle	0.33	0.33	0.33		0.37	0.63	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.52	0.52	0.45		0.59	0.33	0.38	0.14
s, saturation flow rate [veh/h]	1597	1597	1425		3101	4567	4567	1425
c, Capacity [veh/h]	527	527	470		1147	2877	1096	342
d1, Uniform Delay [s]	33.50	33.50	33.50		31.50	10.16	38.00	33.40
k, delay calibration	0.50	0.50	0.50		0.35	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	271.68	271.68	179.42		274.21	0.14	255.94	1.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.58	1.58	1.37		1.60	0.52	1.57	0.56
d, Delay for Lane Group [s/veh]	305.18	305.18	212.92		305.71	10.30	293.94	34.87
Lane Group LOS	F	F	F		F	B	F	C
Critical Lane Group	Yes	No	No		Yes	No	Yes	No
50th-Percentile Queue Length [veh]	51.77	51.77	34.16		56.59	5.15	34.52	4.11
50th-Percentile Queue Length [ft]	1294.35	1294.35	853.90		1414.67	128.74	862.94	102.66
95th-Percentile Queue Length [veh]	80.29	80.29	52.10		88.22	8.87	54.03	7.39
95th-Percentile Queue Length [ft]	2007.22	2007.22	1302.56		2205.41	221.78	1350.65	184.79

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	305.18	305.18	212.92	0.00	0.00	0.00	305.71	10.30	0.00	0.00	293.94	34.87
Movement LOS	F	F	F				F	B			F	C
d_A, Approach Delay [s/veh]	279.49			0.00			173.54			267.76		
Approach LOS	F			A			F			F		
d_I, Intersection Delay [s/veh]	229.83											
Intersection LOS	F											
Intersection V/C	1.492											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 43: Euclid Ave / Kimball Ave**

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.861

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	420.00	100.00	660.00	430.00	100.00	100.00	200.00	100.00	100.00	210.00	100.00	100.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Kimball Ave			Kimball Ave		
Base Volume Input [veh/h]	48	710	43	217	708	76	270	782	45	30	221	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	25	0	0	81	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	7	0	0	6	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	60	64	112	98	9	53	44	0	144	109	297
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	1079	124	414	1169	115	323	826	45	174	330	457
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	284	33	109	308	30	85	217	12	46	87	120
Total Analysis Volume [veh/h]	71	1136	131	436	1231	121	340	869	47	183	347	481
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.2	4.8	0.0	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	3.2
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	23	0	14	27	12	12	23	0	10	21	14
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
g_i, Effective Green Time [s]	6	21	21	12	27	39	10	21	21	8	19	33
g / C, Green / Cycle	0.09	0.30	0.30	0.17	0.39	0.56	0.14	0.31	0.31	0.11	0.27	0.47
(v / s)_i Volume / Saturation Flow Rate	0.03	0.28	0.10	0.16	0.30	0.10	0.12	0.31	0.04	0.07	0.12	0.38
s, saturation flow rate [veh/h]	2750	4050	1264	2750	4050	1264	2750	2831	1264	2750	2831	1264
c, Capacity [veh/h]	239	1220	381	471	1563	665	393	865	386	296	765	555
d1, Uniform Delay [s]	29.97	23.75	19.07	28.56	18.96	8.70	29.34	24.31	17.54	29.85	21.24	17.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.37
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	13.80	2.46	8.17	4.09	0.13	5.81	15.46	0.14	2.10	0.42	12.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

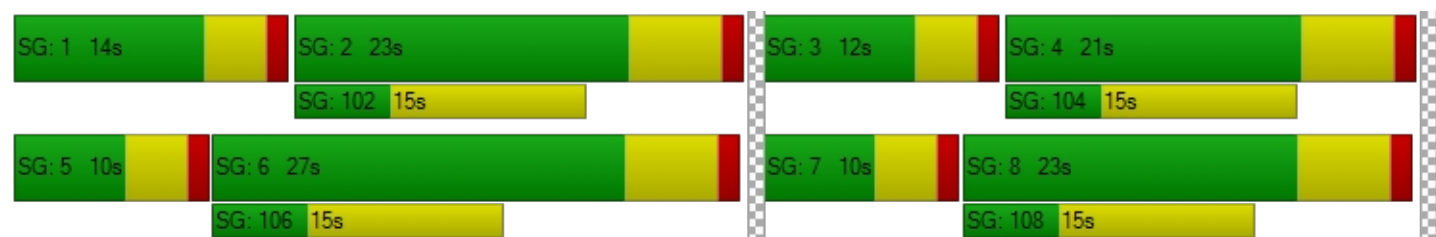
X, volume / capacity	0.30	0.93	0.34	0.92	0.79	0.18	0.87	1.01	0.12	0.62	0.45	0.87
d, Delay for Lane Group [s/veh]	30.65	37.55	21.53	36.73	23.06	8.83	35.15	39.77	17.68	31.95	21.67	30.66
Lane Group LOS	C	D	C	D	C	A	D	F	B	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.55	6.96	1.76	3.96	5.93	0.87	2.90	8.18	0.51	1.46	2.19	7.86
50th-Percentile Queue Length [ft]	13.72	173.94	43.98	99.04	148.14	21.76	72.56	204.44	12.77	36.50	54.73	196.44
95th-Percentile Queue Length [veh]	0.99	11.28	3.17	7.13	9.92	1.57	5.22	12.91	0.92	2.63	3.94	12.45
95th-Percentile Queue Length [ft]	24.70	282.08	79.17	178.28	247.94	39.17	130.61	322.63	22.99	65.71	98.51	311.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.65	37.55	21.53	36.73	23.06	8.83	35.15	39.77	17.68	31.95	21.67	30.66
Movement LOS	C	D	C	D	C	A	D	F	B	C	C	C
d_A, Approach Delay [s/veh]	35.62			25.43			37.69			27.81		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	31.26											
Intersection LOS	C											
Intersection V/C	0.861											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 44: Euclid Ave / Pine Ave**

Control Type:	Signalized	Delay (sec / veh):	22.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.795

**Intersection Setup**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	2	2	0	1	2	0	0	2	0	1
Pocket Length [ft]	220.00	100.00	220.00	210.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

**Volumes**

Name	Euclid Ave			Euclid Ave			Pine Ave			Pine Ave		
Base Volume Input [veh/h]	10	574	914	66	624	6	7	387	46	472	91	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.39	1.39	1.39	1.39	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	0	0	64	17	5	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	5	0	0	4	2	2	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	134	55	0	175	0	0	0	0	155	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	957	1325	92	1110	27	14	387	46	627	91	26
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	252	349	24	292	7	4	102	12	165	24	7
Total Analysis Volume [veh/h]	15	1007	1395	97	1168	28	15	407	48	660	96	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna
Signal group	5	2	7	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups			2,7									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	0
Amber [s]	3.2	4.8	3.2	3.2	4.8	0.0	3.2	4.8	0.0	3.2	4.8	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	28	21	10	21	0	10	21	0	21	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	4	31	52	7	34	34	4	15	19	30
g / C, Green / Cycle	0.05	0.39	0.66	0.08	0.43	0.43	0.05	0.19	0.24	0.38
(v / s)_i Volume / Saturation Flow Rate	0.01	0.17	0.56	0.03	0.19	0.02	0.00	0.13	0.22	0.02
s, saturation flow rate [veh/h]	1573	6001	2486	3056	6001	1404	3056	3146	3056	4501
c, Capacity [veh/h]	73	2359	1561	253	2579	603	139	587	726	1703
d1, Uniform Delay [s]	36.73	17.70	12.60	34.75	16.15	13.27	36.61	30.41	29.66	15.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.38	0.57	8.25	0.95	0.58	0.15	0.34	1.49	4.81	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

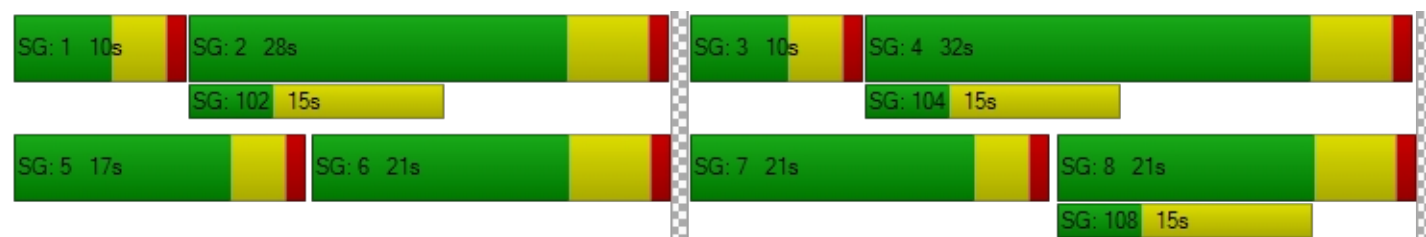
X, volume / capacity	0.21	0.43	0.89	0.38	0.45	0.05	0.11	0.69	0.91	0.06
d, Delay for Lane Group [s/veh]	38.11	18.27	20.85	35.70	16.73	13.42	36.95	31.90	34.48	15.81
Lane Group LOS	D	B	C	D	B	B	D	C	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.30	3.16	9.61	0.89	3.48	0.29	0.14	3.57	6.21	0.34
50th-Percentile Queue Length [ft]	7.46	79.04	240.31	22.18	87.07	7.27	3.53	89.18	155.31	8.62
95th-Percentile Queue Length [veh]	0.54	5.69	14.70	1.60	6.27	0.52	0.25	6.42	10.30	0.62
95th-Percentile Queue Length [ft]	13.43	142.28	367.43	39.92	156.72	13.08	6.36	160.53	257.50	15.51

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	38.11	18.27	20.85	35.70	16.73	13.42	36.95	31.90	0.00	34.48	15.81	0.00
Movement LOS	D	B	C	D	B	B	D	C		C	B	
d_A, Approach Delay [s/veh]	19.88			18.08			32.08			32.11		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	22.35											
Intersection LOS	C											
Intersection V/C	0.795											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 45: Archibald Ave / Schleisman Rd**

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.607

**Intersection Setup**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	1	2	0	1	2	0	1	2	0	1
Pocket Length [ft]	250.00	100.00	250.00	290.00	100.00	200.00	160.00	100.00	500.00	320.00	100.00	220.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald Ave			Archibald Ave			Schleisman Rd			Schleisman Rd		
Base Volume Input [veh/h]	204	456	123	160	576	280	389	948	177	93	318	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.55	0.55	0.55	0.55	0.55	0.55	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	14	0	0	44	10	3	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	7	0	0	5	2	1	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	1097	0	34	978	46	52	0	0	0	0	42
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	1369	68	122	1344	212	445	948	177	93	318	76
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	360	18	32	354	56	117	249	47	24	84	20
Total Analysis Volume [veh/h]	118	1441	72	128	1415	223	468	998	186	98	335	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	7	1	6	3	3	8	0	7	4	0
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.6	5.2	3.6	3.6	5.2	3.6	3.6	5.2	0.0	3.6	5.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	22	10	11	23	15	15	27	0	10	22	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	7	27	35	7	27	42	13	21	21	7	15	15
g / C, Green / Cycle	0.10	0.38	0.51	0.10	0.38	0.60	0.19	0.31	0.31	0.10	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.04	0.32	0.05	0.04	0.31	0.16	0.15	0.22	0.13	0.03	0.07	0.06
s, saturation flow rate [veh/h]	3101	4567	1425	3101	4567	1425	3101	4567	1425	3101	4567	1425
c, Capacity [veh/h]	316	1729	668	321	1737	794	576	1394	435	305	995	311
d1, Uniform Delay [s]	29.36	19.74	10.41	29.34	19.48	8.13	27.33	21.62	19.43	29.38	23.10	22.68
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.73	4.89	0.33	0.80	4.33	0.19	2.84	0.70	0.67	0.60	0.20	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.37	0.83	0.11	0.40	0.81	0.28	0.81	0.72	0.43	0.32	0.34	0.26
d, Delay for Lane Group [s/veh]	30.09	24.63	10.74	30.15	23.81	8.32	30.17	22.32	20.10	29.98	23.30	23.11
Lane Group LOS	C	C	B	C	C	A	C	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.90	6.91	0.59	0.98	6.64	1.43	3.67	4.42	2.26	0.74	1.45	1.04
50th-Percentile Queue Length [ft]	22.47	172.72	14.75	24.43	166.08	35.79	91.76	110.55	56.43	18.60	36.24	26.10
95th-Percentile Queue Length [veh]	1.62	11.22	1.06	1.76	10.87	2.58	6.61	7.87	4.06	1.34	2.61	1.88
95th-Percentile Queue Length [ft]	40.45	280.48	26.56	43.97	271.75	64.43	165.17	196.76	101.57	33.47	65.23	46.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.09	24.63	10.74	30.15	23.81	8.32	30.17	22.32	20.10	29.98	23.30	23.11
Movement LOS	C	C	B	C	C	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	24.41			22.31			24.29			24.55		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.72											
Intersection LOS	C											
Intersection V/C	0.607											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 46: Hellman Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	4.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.424

**Intersection Setup**

Name	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐⇐		⇐⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	409	0	0	427
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	53	55	172	14	34	144
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	6	4	0	8	6
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	409	0	0	427
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	61	994	14	42	1004
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	16	262	4	11	264
Total Analysis Volume [veh/h]	56	64	1046	15	44	1057
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.8	0.0	4.8	0.0	0.0	4.8
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	23	0	47	0	0	47
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
I2, Clearance Lost Time [s]	1.0	0.0	1.0	0.0	0.0	1.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	1.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	8	58	58	58	58
g / C, Green / Cycle	0.12	0.12	0.82	0.82	0.82	0.82
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.36	0.36	0.10	0.37
s, saturation flow rate [veh/h]	1416	1264	1487	1480	423	2831
c, Capacity [veh/h]	172	154	1221	1215	394	2325
d1, Uniform Delay [s]	28.12	28.44	1.74	1.74	3.78	1.78
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.08	1.79	1.13	1.14	0.57	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.33	0.42	0.43	0.44	0.11	0.45
d, Delay for Lane Group [s/veh]	29.20	30.24	2.87	2.89	4.35	2.43
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.85	1.00	0.47	0.48	0.19	0.30
50th-Percentile Queue Length [ft]	21.37	25.12	11.84	11.93	4.86	7.53
95th-Percentile Queue Length [veh]	1.54	1.81	0.85	0.86	0.35	0.54
95th-Percentile Queue Length [ft]	38.46	45.22	21.31	21.48	8.75	13.55

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.20	30.24	2.88	2.89	4.35	2.43
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	29.75		2.88		2.51	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.11					
Intersection LOS	A					
Intersection V/C	0.424					

**Sequence**

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 47: Hellman Ave/Merrill Ave**

Control Type:	Signalized	Delay (sec / veh):	4.7
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.553

**Intersection Setup**

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	⇐⇐		⇐		⇐	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	0	0	0	573	170	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	15.00	15.00	15.00	15.00	15.00	15.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	62	18	69	57	11
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	9	18	22	19	18	10
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	648	342	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	80	40	1309	587	21
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	21	11	344	154	6
Total Analysis Volume [veh/h]	56	84	42	1378	618	22
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.8	0.0	0.0	4.8	4.8	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	23	0	0	37	37	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	0.0	0.0	1.0	1.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	1.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	8	8	48	48	48	48
g / C, Green / Cycle	0.14	0.14	0.79	0.79	0.79	0.79
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.07	0.49	0.22	0.22
s, saturation flow rate [veh/h]	1416	1264	627	2831	1487	1469
c, Capacity [veh/h]	201	179	560	2241	1177	1163
d1, Uniform Delay [s]	23.00	23.66	2.87	2.54	1.66	1.67
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.75	1.90	0.26	1.27	0.57	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.28	0.47	0.08	0.61	0.27	0.28
d, Delay for Lane Group [s/veh]	23.75	25.56	3.13	3.82	2.23	2.26
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.68	1.08	0.11	0.54	0.23	0.23
50th-Percentile Queue Length [ft]	17.06	27.09	2.83	13.62	5.79	5.87
95th-Percentile Queue Length [veh]	1.23	1.95	0.20	0.98	0.42	0.42
95th-Percentile Queue Length [ft]	30.71	48.76	5.09	24.52	10.42	10.57

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	23.75	25.56	3.13	3.82	2.24	2.26
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	24.83		3.80		2.24	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.68					
Intersection LOS	A					
Intersection V/C	0.553					

**Sequence**

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 66: Archibald Ave/Eucalyptus Ave**

Control Type:	Signalized	Delay (sec / veh):	74.5
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.965

**Intersection Setup**

Name	Archibald						Eucalyptus					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	2	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	50.00			50.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Archibald						Eucalyptus					
Base Volume Input [veh/h]	0	868	30	47	1093	0	0	0	0	2	0	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	0.78	0.78	0.78	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	32	44	0	0	12	71	217	0	88	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	3	0	0	4	14	10	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	347	1694	42	107	1344	20	29	52	328	27	60	104
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	379	2418	65	144	2213	105	256	52	416	29	60	126
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	636	17	38	582	28	67	14	109	8	16	33
Total Analysis Volume [veh/h]	399	2545	68	152	2329	111	269	55	438	31	63	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	5	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.6	5.2	0.0	3.6	5.2	0.0	3.2	4.8	3.6	3.2	4.8	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	64	0	10	57	0	25	36	17	10	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
I2, Clearance Lost Time [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	15	62	62	8	55	55	23	36	36	5	19	19
g / C, Green / Cycle	0.13	0.52	0.52	0.07	0.46	0.46	0.19	0.30	0.30	0.05	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.13	0.54	0.54	0.05	0.51	0.08	0.17	0.03	0.31	0.02	0.04	0.09
s, saturation flow rate [veh/h]	3101	3192	1654	3101	4567	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	388	1653	857	207	2098	655	304	509	432	72	265	225
d1, Uniform Delay [s]	52.50	28.93	28.93	54.96	32.43	19.01	47.26	30.10	41.79	55.77	44.19	46.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.21	0.11	0.50	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.18	32.18	44.79	5.02	56.96	0.56	14.78	0.09	46.53	3.96	0.46	2.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

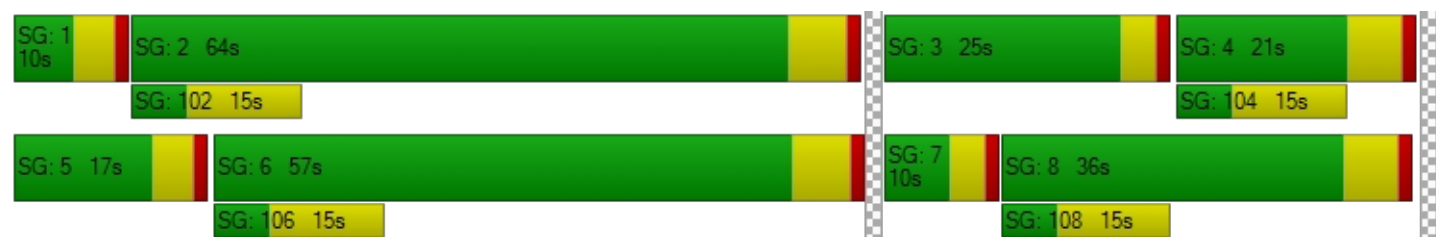
X, volume / capacity	1.03	1.04	1.05	0.74	1.11	0.17	0.88	0.11	1.01	0.43	0.24	0.59
d, Delay for Lane Group [s/veh]	81.68	61.11	73.72	59.98	89.39	19.57	62.04	30.19	88.32	59.73	44.64	49.36
Lane Group LOS	F	F	F	E	F	B	E	C	F	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	7.19	28.47	32.51	2.33	29.50	1.82	8.82	1.13	17.78	0.97	1.64	3.74
50th-Percentile Queue Length [ft]	179.77	711.64	812.69	58.18	737.43	45.40	220.59	28.24	444.48	24.33	40.90	93.62
95th-Percentile Queue Length [veh]	11.73	38.30	43.55	4.19	41.44	3.27	13.70	2.03	24.90	1.75	2.95	6.74
95th-Percentile Queue Length [ft]	293.21	957.58	1088.71	104.72	1036.12	81.73	342.38	50.83	622.49	43.79	73.63	168.51

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	81.68	65.23	73.72	59.98	89.39	19.57	62.04	30.19	88.32	59.73	44.64	49.36
Movement LOS	F	F	E	E	F	B	E	C	F	E	D	D
d_A, Approach Delay [s/veh]	67.61			84.68			74.85			49.46		
Approach LOS	E			F			E			D		
d_I, Intersection Delay [s/veh]	74.53											
Intersection LOS	E											
Intersection V/C	0.965											

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



## **APPENDIX C**

### **Signal Warrant Analysis**

**Baseline 2023 with Project AM & PM Peak Hour  
Intersections #17, #27, #33, #36, #37**

## Signal Warrants Report For Intersection 17: Grove Ave / Chino Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	354	512	350	373
2	340	492	336	358
3	333	481	329	351
4	283	410	280	298
5	269	389	266	283
6	241	348	238	254
7	223	323	221	235
8	212	307	210	224
9	170	246	168	179
10	159	230	158	168
11	159	230	158	168
12	152	220	151	160
13	138	200	137	145
14	127	184	126	134
15	127	184	126	134
16	124	179	122	131
17	71	102	70	75
18	39	56	39	41
19	35	51	35	37
20	14	20	14	15
21	11	15	11	11
22	11	15	11	11
23	7	10	7	7
24	7	10	7	7

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	866	2	723	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	832	2	694	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	814	2	680	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	693	2	578	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
5	2	658	2	549	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
6	2	589	2	492	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
7	2	546	2	456	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
8	2	519	2	434	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
9	2	416	2	347	No	No	No	Yes	No	No	No	No	No	No
10	2	389	2	326	No	No	No	Yes	No	No	No	No	No	No
11	2	389	2	326	No	No	No	Yes	No	No	No	No	No	No
12	2	372	2	311	No	No	No	Yes	No	No	No	No	No	No
13	2	338	2	282	No	No	No	Yes	No	No	No	No	No	No
14	2	311	2	260	No	No	No	No	No	No	No	No	No	No
15	2	311	2	260	No	No	No	No	No	No	No	No	No	No
16	2	303	2	253	No	No	No	No	No	No	No	No	No	No
17	2	173	2	145	No	No	No	No	No	No	No	No	No	No
18	2	95	2	80	No	No	No	No	No	No	No	No	No	No
19	2	86	2	72	No	No	No	No	No	No	No	No	No	No
20	2	34	2	29	No	No	No	No	No	No	No	No	No	No
21	2	26	2	22	No	No	No	No	No	No	No	No	No	No
22	2	26	2	22	No	No	No	No	No	No	No	No	No	No
23	2	17	2	14	No	No	No	No	No	No	No	No	No	No
24	2	17	2	14	No	No	No	No	No	No	No	No	No	No
Hours Met					5	8	8	13	0	3	5	8	8	6

### Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	73	88.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	7:05	9:12
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	350	373
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1589	1589
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>	

## Signal Warrants Report For Intersection 20: Grove Ave / Schaefer Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	357	499	84	70
2	343	479	81	67
3	336	469	79	66
4	286	399	67	56
5	271	379	64	53
6	243	339	57	48
7	225	314	53	44
8	214	299	50	42
9	171	240	40	34
10	161	225	38	32
11	161	225	38	32
12	154	215	36	30
13	139	195	33	27
14	129	180	30	25
15	129	180	30	25
16	125	175	29	25
17	71	100	17	14
18	39	55	9	8
19	36	50	8	7
20	14	20	3	3
21	11	15	3	2
22	11	15	3	2
23	7	10	2	1
24	7	10	2	1

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	856	2	154	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No
2	2	822	2	148	No	No	No	No	No	Yes	Yes	Yes	Yes	No
3	2	805	2	145	No	No	No	No	No	Yes	Yes	Yes	Yes	No
4	2	685	2	123	No	No	No	No	No	No	Yes	Yes	No	No
5	2	650	2	117	No	No	No	No	No	No	Yes	Yes	No	No
6	2	582	2	105	No	No	No	No	No	No	No	Yes	No	No
7	2	539	2	97	No	No	No	No	No	No	No	Yes	No	No
8	2	513	2	92	No	No	No	No	No	No	No	Yes	No	No
9	2	411	2	74	No	No	No	No	No	No	No	No	No	No
10	2	386	2	70	No	No	No	No	No	No	No	No	No	No
11	2	386	2	70	No	No	No	No	No	No	No	No	No	No
12	2	369	2	66	No	No	No	No	No	No	No	No	No	No
13	2	334	2	60	No	No	No	No	No	No	No	No	No	No
14	2	309	2	55	No	No	No	No	No	No	No	No	No	No
15	2	309	2	55	No	No	No	No	No	No	No	No	No	No
16	2	300	2	54	No	No	No	No	No	No	No	No	No	No
17	2	171	2	31	No	No	No	No	No	No	No	No	No	No
18	2	94	2	17	No	No	No	No	No	No	No	No	No	No
19	2	86	2	15	No	No	No	No	No	No	No	No	No	No
20	2	34	2	6	No	No	No	No	No	No	No	No	No	No
21	2	26	2	5	No	No	No	No	No	No	No	No	No	No
22	2	26	2	5	No	No	No	No	No	No	No	No	No	No
23	2	17	2	3	No	No	No	No	No	No	No	No	No	No
24	2	17	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	1	0	3	5	8	3	0

### Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.8	10.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15	0:12
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	84	70
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1010	1010
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	



## Signal Warrants Report For Intersection 27: Grove Ave / Edison Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	284	432	874	454
2	273	415	839	436
3	267	406	822	427
4	227	346	699	363
5	216	328	664	345
6	193	294	594	309
7	179	272	551	286
8	170	259	524	272
9	136	207	420	218
10	128	194	393	204
11	128	194	393	204
12	122	186	376	195
13	111	168	341	177
14	102	156	315	163
15	102	156	315	163
16	99	151	306	159
17	57	86	175	91
18	31	48	96	50
19	28	43	87	45
20	11	17	35	18
21	9	13	26	14
22	9	13	26	14
23	6	9	17	9
24	6	9	17	9

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	716	2	1328	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
2	2	688	2	1275	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
3	2	673	2	1249	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
4	2	573	2	1062	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
5	2	544	2	1009	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
6	2	487	2	903	No	Yes	Yes	Yes	No	No	No	No	Yes	Yes
7	2	451	2	837	No	No	Yes	Yes	No	No	No	No	Yes	Yes
8	2	429	2	796	No	No	Yes	Yes	No	No	No	No	Yes	Yes
9	2	343	2	638	No	No	No	Yes	No	No	No	No	Yes	Yes
10	2	322	2	597	No	No	No	No	No	No	No	No	Yes	Yes
11	2	322	2	597	No	No	No	No	No	No	No	No	Yes	Yes
12	2	308	2	571	No	No	No	No	No	No	No	No	Yes	No
13	2	279	2	518	No	No	No	No	No	No	No	No	Yes	No
14	2	258	2	478	No	No	No	No	No	No	No	No	Yes	No
15	2	258	2	478	No	No	No	No	No	No	No	No	Yes	No
16	2	250	2	465	No	No	No	No	No	No	No	No	Yes	No
17	2	143	2	266	No	No	No	No	No	No	No	No	No	No
18	2	79	2	146	No	No	No	No	No	No	No	No	No	No
19	2	71	2	132	No	No	No	No	No	No	No	No	No	No
20	2	28	2	53	No	No	No	No	No	No	No	No	No	No
21	2	22	2	40	No	No	No	No	No	No	No	No	No	No
22	2	22	2	40	No	No	No	No	No	No	No	No	No	No
23	2	15	2	26	No	No	No	No	No	No	No	No	No	No
24	2	15	2	26	No	No	No	No	No	No	No	No	No	No
Hours Met					3	6	8	9	0	0	3	5	16	11

### Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	616.4	136.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	149:38	17:14
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	874	454
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	2044	2044
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>	

## Signal Warrants Report For Intersection 33: Grove Ave / Eucalyptus Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	290	553	159	148
2	278	531	153	142
3	273	520	149	139
4	232	442	127	118
5	220	420	121	112
6	197	376	108	101
7	183	348	100	93
8	174	332	95	89
9	139	265	76	71
10	131	249	72	67
11	131	249	72	67
12	125	238	68	64
13	113	216	62	58
14	104	199	57	53
15	104	199	57	53
16	102	194	56	52
17	58	111	32	30
18	32	61	17	16
19	29	55	16	15
20	12	22	6	6
21	9	17	5	4
22	9	17	5	4
23	6	11	3	3
24	6	11	3	3

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	843	2	307	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	2	809	2	295	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
3	2	793	2	288	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
4	2	674	2	245	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	2	640	2	233	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
6	2	573	2	209	No	No	Yes	Yes	No	No	No	Yes	No	No
7	2	531	2	193	No	No	No	Yes	No	No	No	Yes	No	No
8	2	506	2	184	No	No	No	Yes	No	No	No	Yes	No	No
9	2	404	2	147	No	No	No	No	No	No	No	No	No	No
10	2	380	2	139	No	No	No	No	No	No	No	No	No	No
11	2	380	2	139	No	No	No	No	No	No	No	No	No	No
12	2	363	2	132	No	No	No	No	No	No	No	No	No	No
13	2	329	2	120	No	No	No	No	No	No	No	No	No	No
14	2	303	2	110	No	No	No	No	No	No	No	No	No	No
15	2	303	2	110	No	No	No	No	No	No	No	No	No	No
16	2	296	2	108	No	No	No	No	No	No	No	No	No	No
17	2	169	2	62	No	No	No	No	No	No	No	No	No	No
18	2	93	2	33	No	No	No	No	No	No	No	No	No	No
19	2	84	2	31	No	No	No	No	No	No	No	No	No	No
20	2	34	2	12	No	No	No	No	No	No	No	No	No	No
21	2	26	2	9	No	No	No	No	No	No	No	No	No	No
22	2	26	2	9	No	No	No	No	No	No	No	No	No	No
23	2	17	2	6	No	No	No	No	No	No	No	No	No	No
24	2	17	2	6	No	No	No	No	No	No	No	No	No	No
Hours Met					2	5	6	8	0	3	5	8	0	0

### Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	633.4	193.6
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	27:58	7:57
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	159	148
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1150	1150
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>	

## Signal Warrants Report For Intersection 34: Carpenter Ave / Eucalyptus Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	186	404	73
2	179	388	70
3	175	380	69
4	149	323	58
5	141	307	55
6	126	275	50
7	117	255	46
8	112	242	44
9	89	194	35
10	84	182	33
11	84	182	33
12	80	174	31
13	73	158	28
14	67	145	26
15	67	145	26
16	65	141	26
17	37	81	15
18	20	44	8
19	19	40	7
20	7	16	3
21	6	12	2
22	6	12	2
23	4	8	1
24	4	8	1

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	4	590	2	73	No	No	No	No	No	No	No	Yes	No	No
2	4	567	2	70	No	No	No	No	No	No	No	Yes	No	No
3	4	555	2	69	No	No	No	No	No	No	No	Yes	No	No
4	4	472	2	58	No	No	No	No	No	No	No	No	No	No
5	4	448	2	55	No	No	No	No	No	No	No	No	No	No
6	4	401	2	50	No	No	No	No	No	No	No	No	No	No
7	4	372	2	46	No	No	No	No	No	No	No	No	No	No
8	4	354	2	44	No	No	No	No	No	No	No	No	No	No
9	4	283	2	35	No	No	No	No	No	No	No	No	No	No
10	4	266	2	33	No	No	No	No	No	No	No	No	No	No
11	4	266	2	33	No	No	No	No	No	No	No	No	No	No
12	4	254	2	31	No	No	No	No	No	No	No	No	No	No
13	4	231	2	28	No	No	No	No	No	No	No	No	No	No
14	4	212	2	26	No	No	No	No	No	No	No	No	No	No
15	4	212	2	26	No	No	No	No	No	No	No	No	No	No
16	4	206	2	26	No	No	No	No	No	No	No	No	No	No
17	4	118	2	15	No	No	No	No	No	No	No	No	No	No
18	4	64	2	8	No	No	No	No	No	No	No	No	No	No
19	4	59	2	7	No	No	No	No	No	No	No	No	No	No
20	4	23	2	3	No	No	No	No	No	No	No	No	No	No
21	4	18	2	2	No	No	No	No	No	No	No	No	No	No
22	4	18	2	2	No	No	No	No	No	No	No	No	No	No
23	4	12	2	1	No	No	No	No	No	No	No	No	No	No
24	4	12	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	3	0	0

### Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.5
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	73
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	663
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 36: Grove Ave / Merill Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	948	1395	6	338
2	910	1339	6	324
3	891	1311	6	318
4	758	1116	5	270
5	720	1060	5	257
6	645	949	4	230
7	597	879	4	213
8	569	837	4	203
9	455	670	3	162
10	427	628	3	152
11	427	628	3	152
12	408	600	3	145
13	370	544	2	132
14	341	502	2	122
15	341	502	2	122
16	332	488	2	118
17	190	279	1	68
18	104	153	1	37
19	95	140	1	34
20	38	56	0	14
21	28	42	0	10
22	28	42	0	10
23	19	28	0	7
24	19	28	0	7

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	5	2343	2	344	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	5	2249	2	330	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	5	2202	2	324	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	5	1874	2	275	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	5	1780	2	262	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	5	1594	2	234	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	5	1476	2	217	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	5	1406	2	207	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	5	1125	2	165	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	5	1055	2	155	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	5	1055	2	155	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	5	1008	2	148	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	5	914	2	134	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
14	5	843	2	124	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
15	5	843	2	124	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
16	5	820	2	120	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
17	5	469	2	69	No	No	No	No	No	No	No	No	No	No
18	5	257	2	38	No	No	No	No	No	No	No	No	No	No
19	5	235	2	35	No	No	No	No	No	No	No	No	No	No
20	5	94	2	14	No	No	No	No	No	No	No	No	No	No
21	5	70	2	10	No	No	No	No	No	No	No	No	No	No
22	5	70	2	10	No	No	No	No	No	No	No	No	No	No
23	5	47	2	7	No	No	No	No	No	No	No	No	No	No
24	5	47	2	7	No	No	No	No	No	No	No	No	No	No
Hours Met					11	15	16	16	13	16	16	16	12	8

### Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.4	51.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01	4:48
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	6	338
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	2687	2687
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>	



## Signal Warrants Report For Intersection 37: Carpenter Ave / Merill Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	1172	726	37	151
2	1125	697	36	145
3	1102	682	35	142
4	938	581	30	121
5	891	552	28	115
6	797	494	25	103
7	738	457	23	95
8	703	436	22	91
9	563	348	18	72
10	527	327	17	68
11	527	327	17	68
12	504	312	16	65
13	457	283	14	59
14	422	261	13	54
15	422	261	13	54
16	410	254	13	53
17	234	145	7	30
18	129	80	4	17
19	117	73	4	15
20	47	29	1	6
21	35	22	1	5
22	35	22	1	5
23	23	15	1	3
24	23	15	1	3

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	4	1898	3	188	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	4	1822	3	181	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	4	1784	3	177	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	4	1519	3	151	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	4	1443	3	143	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	4	1291	3	128	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
7	4	1195	3	118	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
8	4	1139	3	113	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
9	4	911	3	90	No	No	No	No	No	Yes	Yes	Yes	No	No
10	4	854	3	85	No	No	No	No	No	Yes	Yes	Yes	No	No
11	4	854	3	85	No	No	No	No	No	Yes	Yes	Yes	No	No
12	4	816	3	81	No	No	No	No	No	Yes	Yes	Yes	No	No
13	4	740	3	73	No	No	No	No	No	No	Yes	Yes	No	No
14	4	683	3	67	No	No	No	No	No	No	Yes	Yes	No	No
15	4	683	3	67	No	No	No	No	No	No	Yes	Yes	No	No
16	4	664	3	66	No	No	No	No	No	No	Yes	Yes	No	No
17	4	379	3	37	No	No	No	No	No	No	No	No	No	No
18	4	209	3	21	No	No	No	No	No	No	No	No	No	No
19	4	190	3	19	No	No	No	No	No	No	No	No	No	No
20	4	76	3	7	No	No	No	No	No	No	No	No	No	No
21	4	57	3	6	No	No	No	No	No	No	No	No	No	No
22	4	57	3	6	No	No	No	No	No	No	No	No	No	No
23	4	38	3	4	No	No	No	No	No	No	No	No	No	No
24	4	38	3	4	No	No	No	No	No	No	No	No	No	No
Hours Met					1	4	5	8	8	12	16	16	6	3

### Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	436.1	1180
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	4:28	49:29
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	37	151
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	2086	2086
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>	

## Signal Warrants Report For Intersection 17: Grove Ave / Chino Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	537	302	348	505
2	516	290	334	485
3	505	284	327	475
4	430	242	278	404
5	408	230	264	384
6	365	205	237	343
7	338	190	219	318
8	322	181	209	303
9	258	145	167	242
10	242	136	157	227
11	242	136	157	227
12	231	130	150	217
13	209	118	136	197
14	193	109	125	182
15	193	109	125	182
16	188	106	122	177
17	107	60	70	101
18	59	33	38	56
19	54	30	35	51
20	21	12	14	20
21	16	9	10	15
22	16	9	10	15
23	11	6	7	10
24	11	6	7	10

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	839	2	853	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	806	2	819	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	789	2	802	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	672	2	682	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
5	2	638	2	648	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
6	2	570	2	580	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
7	2	528	2	537	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
8	2	503	2	512	No	Yes	Yes	Yes	No	No	No	No	Yes	Yes
9	2	403	2	409	No	No	No	Yes	No	No	No	No	Yes	No
10	2	378	2	384	No	No	No	Yes	No	No	No	No	Yes	No
11	2	378	2	384	No	No	No	Yes	No	No	No	No	Yes	No
12	2	361	2	367	No	No	No	Yes	No	No	No	No	No	No
13	2	327	2	333	No	No	No	No	No	No	No	No	No	No
14	2	302	2	307	No	No	No	No	No	No	No	No	No	No
15	2	302	2	307	No	No	No	No	No	No	No	No	No	No
16	2	294	2	299	No	No	No	No	No	No	No	No	No	No
17	2	167	2	171	No	No	No	No	No	No	No	No	No	No
18	2	92	2	94	No	No	No	No	No	No	No	No	No	No
19	2	84	2	86	No	No	No	No	No	No	No	No	No	No
20	2	33	2	34	No	No	No	No	No	No	No	No	No	No
21	2	25	2	25	No	No	No	No	No	No	No	No	No	No
22	2	25	2	25	No	No	No	No	No	No	No	No	No	No
23	2	17	2	17	No	No	No	No	No	No	No	No	No	No
24	2	17	2	17	No	No	No	No	No	No	No	No	No	No
Hours Met					5	8	8	12	0	3	5	7	11	8

### Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	59.7	188.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	5:46	26:25
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	348	505
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1692	1692
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>	

## Signal Warrants Report For Intersection 20: Grove Ave / Schaefer Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	413	307	60	231
2	396	295	58	222
3	388	289	56	217
4	330	246	48	185
5	314	233	46	176
6	281	209	41	157
7	260	193	38	146
8	248	184	36	139
9	198	147	29	111
10	186	138	27	104
11	186	138	27	104
12	178	132	26	99
13	161	120	23	90
14	149	111	22	83
15	149	111	22	83
16	145	107	21	81
17	83	61	12	46
18	45	34	7	25
19	41	31	6	23
20	17	12	2	9
21	12	9	2	7
22	12	9	2	7
23	8	6	1	5
24	8	6	1	5

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	720	2	291	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	691	2	280	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
3	2	677	2	273	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
4	2	576	2	233	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
5	2	547	2	222	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	2	490	2	198	No	Yes	Yes	Yes	No	No	No	No	No	No
7	2	453	2	184	No	No	Yes	Yes	No	No	No	No	No	No
8	2	432	2	175	No	No	Yes	Yes	No	No	No	No	No	No
9	2	345	2	140	No	No	No	Yes	No	No	No	No	No	No
10	2	324	2	131	No	No	No	No	No	No	No	No	No	No
11	2	324	2	131	No	No	No	No	No	No	No	No	No	No
12	2	310	2	125	No	No	No	No	No	No	No	No	No	No
13	2	281	2	113	No	No	No	No	No	No	No	No	No	No
14	2	260	2	105	No	No	No	No	No	No	No	No	No	No
15	2	260	2	105	No	No	No	No	No	No	No	No	No	No
16	2	252	2	102	No	No	No	No	No	No	No	No	No	No
17	2	144	2	58	No	No	No	No	No	No	No	No	No	No
18	2	79	2	32	No	No	No	No	No	No	No	No	No	No
19	2	72	2	29	No	No	No	No	No	No	No	No	No	No
20	2	29	2	11	No	No	No	No	No	No	No	No	No	No
21	2	21	2	9	No	No	No	No	No	No	No	No	No	No
22	2	21	2	9	No	No	No	No	No	No	No	No	No	No
23	2	14	2	6	No	No	No	No	No	No	No	No	No	No
24	2	14	2	6	No	No	No	No	No	No	No	No	No	No
Hours Met					3	6	8	9	0	1	3	5	5	3

### Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.8	14.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10	0:55
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	60	231
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1011	1011
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 27: Grove Ave / Edison Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	498	321	548	924
2	478	308	526	887
3	468	302	515	869
4	398	257	438	739
5	378	244	416	702
6	339	218	373	628
7	314	202	345	582
8	299	193	329	554
9	239	154	263	444
10	224	144	247	416
11	224	144	247	416
12	214	138	236	397
13	194	125	214	360
14	179	116	197	333
15	179	116	197	333
16	174	112	192	323
17	100	64	110	185
18	55	35	60	102
19	50	32	55	92
20	20	13	22	37
21	15	10	16	28
22	15	10	16	28
23	10	6	11	18
24	10	6	11	18

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	819	2	1472	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	786	2	1413	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	770	2	1384	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	655	2	1177	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
5	2	622	2	1118	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
6	2	557	2	1001	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
7	2	516	2	927	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
8	2	492	2	883	No	Yes	Yes	Yes	No	No	No	No	Yes	Yes
9	2	393	2	707	No	No	No	Yes	No	No	No	No	Yes	Yes
10	2	368	2	663	No	No	No	Yes	No	No	No	No	Yes	Yes
11	2	368	2	663	No	No	No	Yes	No	No	No	No	Yes	Yes
12	2	352	2	633	No	No	No	Yes	No	No	No	No	Yes	Yes
13	2	319	2	574	No	No	No	No	No	No	No	No	Yes	No
14	2	295	2	530	No	No	No	No	No	No	No	No	Yes	No
15	2	295	2	530	No	No	No	No	No	No	No	No	Yes	No
16	2	286	2	515	No	No	No	No	No	No	No	No	Yes	No
17	2	164	2	295	No	No	No	No	No	No	No	No	No	No
18	2	90	2	162	No	No	No	No	No	No	No	No	No	No
19	2	82	2	147	No	No	No	No	No	No	No	No	No	No
20	2	33	2	59	No	No	No	No	No	No	No	No	No	No
21	2	25	2	44	No	No	No	No	No	No	No	No	No	No
22	2	25	2	44	No	No	No	No	No	No	No	No	No	No
23	2	16	2	29	No	No	No	No	No	No	No	No	No	No
24	2	16	2	29	No	No	No	No	No	No	No	No	No	No
Hours Met					5	8	8	12	0	3	4	7	16	12

### Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	260.9	712.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	39:42	182:45
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	548	924
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	2291	2291
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>	



## Signal Warrants Report For Intersection 33: Grove Ave / Eucalyptus Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	376	319	352	151
2	361	306	338	145
3	353	300	331	142
4	301	255	282	121
5	286	242	268	115
6	256	217	239	103
7	237	201	222	95
8	226	191	211	91
9	180	153	169	72
10	169	144	158	68
11	169	144	158	68
12	162	137	151	65
13	147	124	137	59
14	135	115	127	54
15	135	115	127	54
16	132	112	123	53
17	75	64	70	30
18	41	35	39	17
19	38	32	35	15
20	15	13	14	6
21	11	10	11	5
22	11	10	11	5
23	8	6	7	3
24	8	6	7	3

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	695	2	503	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	2	667	2	483	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	2	653	2	473	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	2	556	2	403	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	528	2	383	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	473	2	342	No	No	Yes	Yes	No	No	No	No	No	No
7	2	438	2	317	No	No	Yes	Yes	No	No	No	No	No	No
8	2	417	2	302	No	No	No	Yes	No	No	No	No	No	No
9	2	333	2	241	No	No	No	No	No	No	No	No	No	No
10	2	313	2	226	No	No	No	No	No	No	No	No	No	No
11	2	313	2	226	No	No	No	No	No	No	No	No	No	No
12	2	299	2	216	No	No	No	No	No	No	No	No	No	No
13	2	271	2	196	No	No	No	No	No	No	No	No	No	No
14	2	250	2	181	No	No	No	No	No	No	No	No	No	No
15	2	250	2	181	No	No	No	No	No	No	No	No	No	No
16	2	244	2	176	No	No	No	No	No	No	No	No	No	No
17	2	139	2	100	No	No	No	No	No	No	No	No	No	No
18	2	76	2	56	No	No	No	No	No	No	No	No	No	No
19	2	70	2	50	No	No	No	No	No	No	No	No	No	No
20	2	28	2	20	No	No	No	No	No	No	No	No	No	No
21	2	21	2	16	No	No	No	No	No	No	No	No	No	No
22	2	21	2	16	No	No	No	No	No	No	No	No	No	No
23	2	14	2	10	No	No	No	No	No	No	No	No	No	No
24	2	14	2	10	No	No	No	No	No	No	No	No	No	No
Hours Met					3	5	7	8	0	0	3	5	3	0

### Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	73.2	46.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	7:09	1:57
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	352	151
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1198	1198
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	No
<b>Warrant Met for Intersection</b>	<b>Yes</b>	

## Signal Warrants Report For Intersection 34: Carpenter Ave / Eucalyptus Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	329	181	120
2	316	174	115
3	309	170	113
4	263	145	96
5	250	138	91
6	224	123	82
7	207	114	76
8	197	109	72
9	158	87	58
10	148	81	54
11	148	81	54
12	141	78	52
13	128	71	47
14	118	65	43
15	118	65	43
16	115	63	42
17	66	36	24
18	36	20	13
19	33	18	12
20	13	7	5
21	10	5	4
22	10	5	4
23	7	4	2
24	7	4	2

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	4	510	2	120	No	No	No	Yes	No	No	No	Yes	No	No
2	4	490	2	115	No	No	No	Yes	No	No	No	No	No	No
3	4	479	2	113	No	No	No	Yes	No	No	No	No	No	No
4	4	408	2	96	No	No	No	No	No	No	No	No	No	No
5	4	388	2	91	No	No	No	No	No	No	No	No	No	No
6	4	347	2	82	No	No	No	No	No	No	No	No	No	No
7	4	321	2	76	No	No	No	No	No	No	No	No	No	No
8	4	306	2	72	No	No	No	No	No	No	No	No	No	No
9	4	245	2	58	No	No	No	No	No	No	No	No	No	No
10	4	229	2	54	No	No	No	No	No	No	No	No	No	No
11	4	229	2	54	No	No	No	No	No	No	No	No	No	No
12	4	219	2	52	No	No	No	No	No	No	No	No	No	No
13	4	199	2	47	No	No	No	No	No	No	No	No	No	No
14	4	183	2	43	No	No	No	No	No	No	No	No	No	No
15	4	183	2	43	No	No	No	No	No	No	No	No	No	No
16	4	178	2	42	No	No	No	No	No	No	No	No	No	No
17	4	102	2	24	No	No	No	No	No	No	No	No	No	No
18	4	56	2	13	No	No	No	No	No	No	No	No	No	No
19	4	51	2	12	No	No	No	No	No	No	No	No	No	No
20	4	20	2	5	No	No	No	No	No	No	No	No	No	No
21	4	15	2	4	No	No	No	No	No	No	No	No	No	No
22	4	15	2	4	No	No	No	No	No	No	No	No	No	No
23	4	11	2	2	No	No	No	No	No	No	No	No	No	No
24	4	11	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	1	0	0

### Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.1
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:24
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	120
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	630
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 36: Grove Ave / Merill Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	1605	945	12	300
2	1541	907	12	288
3	1509	888	11	282
4	1284	756	10	240
5	1220	718	9	228
6	1091	643	8	204
7	1011	595	8	189
8	963	567	7	180
9	770	454	6	144
10	722	425	5	135
11	722	425	5	135
12	690	406	5	129
13	626	369	5	117
14	578	340	4	108
15	578	340	4	108
16	562	331	4	105
17	321	189	2	60
18	177	104	1	33
19	161	95	1	30
20	64	38	0	12
21	48	28	0	9
22	48	28	0	9
23	32	19	0	6
24	32	19	0	6

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	5	2550	2	312	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
2	5	2448	2	300	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	5	2397	2	293	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	5	2040	2	250	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	5	1938	2	237	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	5	1734	2	212	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	5	1606	2	197	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	5	1530	2	187	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	5	1224	2	150	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	5	1147	2	140	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	5	1147	2	140	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	5	1096	2	134	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	5	995	2	122	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
14	5	918	2	112	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
15	5	918	2	112	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
16	5	893	2	109	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
17	5	510	2	62	No	No	No	No	No	No	No	Yes	No	No
18	5	281	2	34	No	No	No	No	No	No	No	No	No	No
19	5	256	2	31	No	No	No	No	No	No	No	No	No	No
20	5	102	2	12	No	No	No	No	No	No	No	No	No	No
21	5	76	2	9	No	No	No	No	No	No	No	No	No	No
22	5	76	2	9	No	No	No	No	No	No	No	No	No	No
23	5	51	2	6	No	No	No	No	No	No	No	No	No	No
24	5	51	2	6	No	No	No	No	No	No	No	No	No	No
Hours Met					8	12	16	16	15	16	16	17	11	8

### Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.4	34.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02	2:53
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	12	300
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	2862	2862
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 37: Carpenter Ave / Merill Ave

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	701	1072	97	367
2	673	1029	93	352
3	659	1008	91	345
4	561	858	78	294
5	533	815	74	279
6	477	729	66	250
7	442	675	61	231
8	421	643	58	220
9	336	515	47	176
10	315	482	44	165
11	315	482	44	165
12	301	461	42	158
13	273	418	38	143
14	252	386	35	132
15	252	386	35	132
16	245	375	34	128
17	140	214	19	73
18	77	118	11	40
19	70	107	10	37
20	28	43	4	15
21	21	32	3	11
22	21	32	3	11
23	14	21	2	7
24	14	21	2	7

### Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	4	1773	3	464	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	4	1702	3	445	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	4	1667	3	436	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	4	1419	3	372	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	4	1348	3	353	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	4	1206	3	316	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	4	1117	3	292	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	4	1064	3	278	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	4	851	3	223	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
10	4	797	3	209	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
11	4	797	3	209	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
12	4	762	3	200	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
13	4	691	3	181	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
14	4	638	3	167	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
15	4	638	3	167	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
16	4	620	3	162	No	Yes	Yes	Yes	No	No	No	Yes	No	No
17	4	354	3	92	No	No	No	No	No	No	No	No	No	No
18	4	195	3	51	No	No	No	No	No	No	No	No	No	No
19	4	177	3	47	No	No	No	No	No	No	No	No	No	No
20	4	71	3	19	No	No	No	No	No	No	No	No	No	No
21	4	53	3	14	No	No	No	No	No	No	No	No	No	No
22	4	53	3	14	No	No	No	No	No	No	No	No	No	No
23	4	35	3	9	No	No	No	No	No	No	No	No	No	No
24	4	35	3	9	No	No	No	No	No	No	No	No	No	No
Hours Met					12	16	16	16	8	12	15	16	8	6

### Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	5301.1	1766.2
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	142:50	180:02
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	97	367
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	2237	2237
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>	



## **APPENDIX D**

### **Freeway Mainline Analysis**

## **HCS BASIC FREEWAY SEGMENT ANALYSIS**

**EXISTING (2017) AM/PM PEAK HOUR**

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 6/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Archibald Ave to Haven Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	6140	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1535	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1630	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1630	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.9	mi/h
Number of lanes, N	4	
Density, D	24.0	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis  
-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 6/14/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Archibald Ave to Haven Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----  
Flow Inputs and Adjustments  
-----

Volume, V	6587	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1647	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1749	pc/h/ln

-----  
Speed Inputs and Adjustments  
-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----  
LOS and Performance Measures  
-----

Flow rate, vp	1749	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	66.5	mi/h
Number of lanes, N	4	
Density, D	26.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

---

Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Euclid Ave to Grove Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

---

Flow Inputs and Adjustments

---

Volume, V	6518	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1630	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1731	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	1731	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	66.7	mi/h
Number of lanes, N	4	
Density, D	25.9	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

---

Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Euclid Ave to Grove Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

---

Flow Inputs and Adjustments

---

Volume, V	6993	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1749	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1857	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	1857	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	4	
Density, D	28.6	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Grove Ave to Vineyard Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	6314	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1579	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1676	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1676	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.4	mi/h
Number of lanes, N	4	
Density, D	24.9	pc/mi/ln
Level of service, LOS	C	



Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Grove Ave to Vineyard Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	6775	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1694	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1799	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1799	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.8	mi/h
Number of lanes, N	4	
Density, D	27.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Vineyard Ave to Archibald Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	6343	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1586	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1684	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1684	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.3	mi/h
Number of lanes, N	4	
Density, D	25.0	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Vineyard Ave to Archibald Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

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Flow Inputs and Adjustments

---

Volume, V	6806	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1702	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1807	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	1807	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.7	mi/h
Number of lanes, N	4	
Density, D	27.5	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: West of Euclid Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	6402	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1601	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1700	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1700	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.1	mi/h
Number of lanes, N	4	
Density, D	25.3	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: West of Euclid Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	6868	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1717	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1823	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1823	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.5	mi/h
Number of lanes, N	4	
Density, D	27.8	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Archibald Ave to Haven Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	7533	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1884	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1600	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1600	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	68.1	mi/h
Number of lanes, N	5	
Density, D	23.5	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Archibald Ave to Haven Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

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Flow Inputs and Adjustments

---

Volume, V	7623	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1906	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1619	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	1619	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	68.0	mi/h
Number of lanes, N	5	
Density, D	23.8	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

---

Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Euclid Ave to Grove Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

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Flow Inputs and Adjustments

---

Volume, V	7997	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2000	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2123	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2123	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	60.1	mi/h
Number of lanes, N	4	
Density, D	35.3	pc/mi/ln
Level of service, LOS	E	



Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Euclid Ave to Grove Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	8093	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2024	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2149	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2149	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	59.6	mi/h
Number of lanes, N	4	
Density, D	36.1	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Grove Ave to Vineyard Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

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Flow Inputs and Adjustments

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Volume, V	7747	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1937	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2057	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2057	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	61.5	mi/h
Number of lanes, N	4	
Density, D	33.5	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Grove Ave to Vineyard Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

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Flow Inputs and Adjustments

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Volume, V	7840	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1960	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2082	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2082	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	61.0	mi/h
Number of lanes, N	4	
Density, D	34.1	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Vineyard Ave to Archibald Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	7783	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1946	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2066	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2066	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	61.3	mi/h
Number of lanes, N	4	
Density, D	33.7	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Vineyard Ave to Archibald Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	7876	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1969	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1673	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1673	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.4	mi/h
Number of lanes, N	5	
Density, D	24.8	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: West of Euclid Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	7854	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1964	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2085	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2085	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	60.9	mi/h
Number of lanes, N	4	
Density, D	34.2	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

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Flow Inputs and Adjustments

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Volume, V	7949	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1988	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2110	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2110	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	60.4	mi/h
Number of lanes, N	4	
Density, D	34.9	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: Interstate 15 Northbound  
From/To: Cantu Galleano to Limonite  
Jurisdiction: Caltrans  
Analysis Year: 2015  
Description: West Ontario Commerce Center Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	4995	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1249	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1752	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1752	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	66.5	mi/h
Number of lanes, N	3	
Density, D	26.4	pc/mi/ln
Level of service, LOS	D	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: Cantu Galleano to Limonite  
 Jurisdiction: Caltrans  
 Analysis Year: 2015  
 Description: West Ontario Commerce Center Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	4951	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1238	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1736	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

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LOS and Performance Measures

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Flow rate, vp	1736	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	66.7	mi/h
Number of lanes, N	3	
Density, D	26.0+	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: Interstate 15 Northbound  
From/To: North of Cantu-Galleano Ranch  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	4995	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1249	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1051	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1051	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	5	
Density, D	15.0	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: Interstate 15 Northbound  
From/To: North of Cantu-Galleano Ranch  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	4951	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1238	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1042	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1042	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	5	
Density, D	14.9	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: Interstate 15 Northbound  
From/To: South of Limonite Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	5097	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1275	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1787	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1787	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	66.0	mi/h
Number of lanes, N	3	
Density, D	27.1	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

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Flow Inputs and Adjustments

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Volume, V	5052	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1263	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1772	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

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LOS and Performance Measures

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Flow rate, vp	1772	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	66.2	mi/h
Number of lanes, N	3	
Density, D	26.8	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: Interstate 15 Southbound  
From/To: Cantu Galleano to Limonite  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	5690	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1423	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1995	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1995	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	62.7	mi/h
Number of lanes, N	3	
Density, D	31.8	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: Interstate 15 Southbound  
From/To: Cantu Galleano to Limonite  
Jurisdiction: Caltrans  
Analysis Year: 2015  
Description: West Ontario Commerce Center Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	5394	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1349	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1891	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1891	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	64.5	mi/h
Number of lanes, N	3	
Density, D	29.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	5394	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1349	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1419	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1419	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.4	mi/h
Number of lanes, N	4	
Density, D	20.4	pc/mi/ln
Level of service, LOS	C	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/14/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

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Flow Inputs and Adjustments

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Volume, V	5690	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1423	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1496	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

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LOS and Performance Measures

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Flow rate, vp	1496	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.0	mi/h
Number of lanes, N	4	
Density, D	21.7	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: Interstate 15 Southbound  
From/To: South of Limonite Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: 2015  
Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	5504	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1376	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1930	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1930	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	63.8	mi/h
Number of lanes, N	3	
Density, D	30.2	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 06/20/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2015  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Flow Inputs and Adjustments-----

Volume, V	5805	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1452	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2036	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2036	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	61.9	mi/h
Number of lanes, N	3	
Density, D	32.9	pc/mi/ln
Level of service, LOS	D	

**EXISTING PLUS PROJECT AM/PM PEAK HOUR**

Phone: Fax:  
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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Archibald Ave to Haven Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6182	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1546	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1641	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1641	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.7	mi/h
Number of lanes, N	4	
Density, D	24.2	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Archibald Ave to Haven Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6685	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1672	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1775	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1775	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	66.2	mi/h
Number of lanes, N	4	
Density, D	26.8	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Euclid Ave to Grove Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6661	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1666	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1768	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1768	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	66.3	mi/h
Number of lanes, N	4	
Density, D	26.7	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Euclid Ave to Grove Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	7035	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1759	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1868	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1868	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	64.8	mi/h
Number of lanes, N	4	
Density, D	28.8	pc/mi/ln
Level of service, LOS	D	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Grove Ave to Vineyard Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6314	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1579	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1676	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1676	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.4	mi/h
Number of lanes, N	4	
Density, D	24.9	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Grove Ave to Vineyard Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6775	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1694	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1799	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1799	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.8	mi/h
Number of lanes, N	4	
Density, D	27.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Vineyard Ave to Archibald Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6343	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1586	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1684	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1684	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.3	mi/h
Number of lanes, N	4	
Density, D	25.0	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Vineyard Ave to Archibald Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6806	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1702	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1807	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1807	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.7	mi/h
Number of lanes, N	4	
Density, D	27.5	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: West of Euclid Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6580	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1645	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1747	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1747	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	66.5	mi/h
Number of lanes, N	4	
Density, D	26.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6889	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1723	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1829	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1829	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.4	mi/h
Number of lanes, N	4	
Density, D	28.0	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Archibald Ave to Haven Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7667	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1917	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1628	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1628	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.9	mi/h
Number of lanes, N	5	
Density, D	24.0	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Archibald Ave to Haven Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7665	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1917	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1628	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	1628	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.9	mi/h
Number of lanes, N	5	
Density, D	24.0	pc/mi/ln
Level of service, LOS	C	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Euclid Ave to Grove Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	8021	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2006	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2130	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2130	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	4	
Density, D	35.5	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Euclid Ave to Grove Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	8128	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2032	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2158	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2158	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	59.4	mi/h
Number of lanes, N	4	
Density, D	36.4	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Grove Ave to Vineyard Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7747	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1937	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2057	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2057	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	61.5	mi/h
Number of lanes, N	4	
Density, D	33.5	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Grove Ave to Vineyard Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7840	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1960	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2082	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	2082	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	61.0	mi/h
Number of lanes, N	4	
Density, D	34.1	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Vineyard Ave to Archibald Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7783	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1946	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2066	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	2066	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	61.3	mi/h
Number of lanes, N	4	
Density, D	33.7	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Vineyard Ave to Archibald Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7876	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1969	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1673	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1673	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.4	mi/h
Number of lanes, N	5	
Density, D	24.8	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7902	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1976	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2098	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2098	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	60.6	mi/h
Number of lanes, N	4	
Density, D	34.6	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	8009	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2003	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2126	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2126	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	60.1	mi/h
Number of lanes, N	4	
Density, D	35.4	pc/mi/ln
Level of service, LOS	E	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed:  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: Cantu Galleano to Limonite  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	4998	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1250	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1753	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1753	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	66.5	mi/h
Number of lanes, N	3	
Density, D	26.4	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed:  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: Cantu Galleano to Limonite  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	4956	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1239	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1738	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

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LOS and Performance Measures

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Flow rate, vp	1738	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	66.6	mi/h
Number of lanes, N	3	
Density, D	26.1	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	5044	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1261	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1061	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

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LOS and Performance Measures

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Flow rate, vp	1061	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	5	
Density, D	15.2	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:  
E-mail:

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Operational Analysis  
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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: Interstate 15 Northbound  
From/To: North of Cantu-Galleano Ranch  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments  
-----

Volume, V	5074	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1269	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1068	pc/h/ln

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Speed Inputs and Adjustments  
-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

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LOS and Performance Measures  
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Flow rate, vp	1068	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	5	
Density, D	15.3	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	5204	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1301	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1825	pc/h/ln

---

Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

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LOS and Performance Measures

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Flow rate, vp	1825	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	65.5	mi/h
Number of lanes, N	3	
Density, D	27.9	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: Interstate 15 Northbound  
From/To: South of Limonite Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	5088	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1272	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1784	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1784	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	66.0	mi/h
Number of lanes, N	3	
Density, D	27.0	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: Cantu Galleano to Limonite  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	5402	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1351	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1894	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

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LOS and Performance Measures

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Flow rate, vp	1894	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	64.4	mi/h
Number of lanes, N	3	
Density, D	29.4	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: Cantu Galleano to Limonite  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	5780	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1445	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2027	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

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LOS and Performance Measures

---

Flow rate, vp	2027	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	62.1	mi/h
Number of lanes, N	3	
Density, D	32.7	pc/mi/ln
Level of service, LOS	D	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	5569	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1393	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1465	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1465	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.2	mi/h
Number of lanes, N	4	
Density, D	21.2	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: Interstate 15 Southbound  
From/To: North of Cantu-Galleano Ranch  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	5829	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1458	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1533	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1533	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.7	mi/h
Number of lanes, N	4	
Density, D	22.3	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	5532	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1383	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1940	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	1940	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	63.6	mi/h
Number of lanes, N	3	
Density, D	30.5	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: Interstate 15 Southbound  
From/To: South of Limonite Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	5809	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1453	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2037	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

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LOS and Performance Measures

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Flow rate, vp	2037	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	61.9	mi/h
Number of lanes, N	3	
Density, D	32.9	pc/mi/ln
Level of service, LOS	D	

**BASELINE (2023) PLUS PROJECT AM/PM PEAK HOUR**

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Archibald Ave to Haven Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6592	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1648	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1750	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1750	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	66.5	mi/h
Number of lanes, N	4	
Density, D	26.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Archibald Ave to Haven Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7094	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1774	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1883	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1883	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	64.6	mi/h
Number of lanes, N	4	
Density, D	29.2	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Euclid Ave to Grove Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	7101	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1776	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1885	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1885	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	64.6	mi/h
Number of lanes, N	4	
Density, D	29.2	pc/mi/ln
Level of service, LOS	D	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Euclid Ave to Grove Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7394	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1849	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1963	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1963	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	63.2	mi/h
Number of lanes, N	4	
Density, D	31.0	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Grove Ave to Vineyard Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	6750	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1688	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1792	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1792	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.9	mi/h
Number of lanes, N	4	
Density, D	27.2	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Grove Ave to Vineyard Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	7167	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1792	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1903	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1903	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	64.3	mi/h
Number of lanes, N	4	
Density, D	29.6	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Vineyard Ave to Archibald Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6779	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1695	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1800	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1800	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.8	mi/h
Number of lanes, N	4	
Density, D	27.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Vineyard Ave to Archibald Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7196	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1799	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1911	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1911	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	64.1	mi/h
Number of lanes, N	4	
Density, D	29.8	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7294	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1824	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1937	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1937	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	63.7	mi/h
Number of lanes, N	4	
Density, D	30.4	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7125	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1782	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1892	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	1892	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	64.4	mi/h
Number of lanes, N	4	
Density, D	29.4	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Archibald Ave to Haven Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	8354	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2089	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1774	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1774	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	66.2	mi/h
Number of lanes, N	5	
Density, D	26.8	pc/mi/ln
Level of service, LOS	D	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Archibald Ave to Haven Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7989	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1998	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1697	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	1697	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	67.1	mi/h
Number of lanes, N	5	
Density, D	25.3	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Euclid Ave to Grove Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	8769	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2193	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2328	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2328	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	55.2	mi/h
Number of lanes, N	4	
Density, D	42.1	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Euclid Ave to Grove Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	8573	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2144	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2276	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

---

LOS and Performance Measures

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Flow rate, vp	2276	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	56.6	mi/h
Number of lanes, N	4	
Density, D	40.2	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Grove Ave to Vineyard Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	8451	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2113	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2244	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	2244	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	57.4	mi/h
Number of lanes, N	4	
Density, D	39.1	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Grove Ave to Vineyard Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	8277	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2070	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2198	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2198	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	58.4	mi/h
Number of lanes, N	4	
Density, D	37.6	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Vineyard Ave to Archibald Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	8431	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2108	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2238	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	2238	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	57.5	mi/h
Number of lanes, N	4	
Density, D	38.9	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Vineyard Ave to Archibald Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	8520	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2130	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1810	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1810	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.7	mi/h
Number of lanes, N	5	
Density, D	27.6	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	8464	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2116	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2247	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	2247	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	57.3	mi/h
Number of lanes, N	4	
Density, D	39.2	pc/mi/ln
Level of service, LOS	E	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	8757	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2190	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2325	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2325	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	55.3	mi/h
Number of lanes, N	4	
Density, D	42.0	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: Cantu Galleano to Limonite  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	5726	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1432	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2008	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

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LOS and Performance Measures

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Flow rate, vp	2008	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	62.4	mi/h
Number of lanes, N	3	
Density, D	32.2	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: Interstate 15 Northbound  
From/To: Cantu Galleano to Limonite  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	6425	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1607	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2253	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2253	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	57.1	mi/h
Number of lanes, N	3	
Density, D	39.4	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6288	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1572	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1323	pc/h/ln

---

Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1323	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.8	mi/h
Number of lanes, N	5	
Density, D	18.9	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7269	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1818	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1529	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

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LOS and Performance Measures

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Flow rate, vp	1529	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.7	mi/h
Number of lanes, N	5	
Density, D	22.2	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	6546	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1637	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2295	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

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LOS and Performance Measures

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Flow rate, vp	2295	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	56.1	mi/h
Number of lanes, N	3	
Density, D	40.9	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	6174	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1544	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2165	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

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LOS and Performance Measures

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Flow rate, vp	2165	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	59.2	mi/h
Number of lanes, N	3	
Density, D	36.6	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: Cantu Galleano to Limonite  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	8127	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2032	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2850	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

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LOS and Performance Measures

---

Flow rate, vp	2850	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	38.4	mi/h
Number of lanes, N	3	
Density, D	74.2	pc/mi/ln
Level of service, LOS	F	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: Cantu Galleano to Limonite  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6173	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1544	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2165	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

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LOS and Performance Measures

---

Flow rate, vp	2165	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	59.2	mi/h
Number of lanes, N	3	
Density, D	36.6	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	9203	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2301	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2420	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2420	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	52.7	mi/h
Number of lanes, N	4	
Density, D	45.9	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	6875	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1719	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1808	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

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LOS and Performance Measures

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Flow rate, vp	1808	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	65.7	mi/h
Number of lanes, N	4	
Density, D	27.5	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	6223	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1556	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2182	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

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LOS and Performance Measures

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Flow rate, vp	2182	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	58.8	mi/h
Number of lanes, N	3	
Density, D	37.1	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7017	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1755	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2461	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

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LOS and Performance Measures

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Flow rate, vp	2461	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	51.6	mi/h
Number of lanes, N	3	
Density, D	47.7	pc/mi/ln
Level of service, LOS	F	

**HORIZON YEAR 2040 PLUS PROJECT AM/PM PEAK HOUR**

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Archibald Ave to Haven Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

---

Flow Inputs and Adjustments

---

Volume, V	6890	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1723	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1829	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1829	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.4	mi/h
Number of lanes, N	4	
Density, D	28.0	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Archibald Ave to Haven Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	7638	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1910	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2028	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2028	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	62.0	mi/h
Number of lanes, N	4	
Density, D	32.7	pc/mi/ln
Level of service, LOS	D	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Euclid Ave to Grove Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7421	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1856	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1970	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	1970	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	63.1	mi/h
Number of lanes, N	4	
Density, D	31.2	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Euclid Ave to Grove Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7929	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1983	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2105	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

---

Flow rate, vp	2105	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	60.5	mi/h
Number of lanes, N	4	
Density, D	34.8	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Grove Ave to Vineyard Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7075	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1769	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1878	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1878	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	64.7	mi/h
Number of lanes, N	4	
Density, D	29.0	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Grove Ave to Vineyard Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	7699	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1925	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2044	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2044	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	61.7	mi/h
Number of lanes, N	4	
Density, D	33.1	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: Vineyard Ave to Archibald Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	7104	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1776	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1886	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1886	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	64.5	mi/h
Number of lanes, N	4	
Density, D	29.2	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: Vineyard Ave to Archibald Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7728	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1932	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2052	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2052	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	61.6	mi/h
Number of lanes, N	4	
Density, D	33.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Eastbound  
From/To: West of Euclid Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7609	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1903	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2020	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2020	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	62.2	mi/h
Number of lanes, N	4	
Density, D	32.5	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Eastbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	7661	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1916	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2034	pc/h/ln

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Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2034	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	61.9	mi/h
Number of lanes, N	4	
Density, D	32.8	pc/mi/ln
Level of service, LOS	D	



Phone: Fax:  
E-mail:

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Operational Analysis  
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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 06/14/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Archibald Ave to Haven Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments  
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Volume, V	8592	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2148	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1825	pc/h/ln

-----  
Speed Inputs and Adjustments  
-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures  
-----

Flow rate, vp	1825	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.5	mi/h
Number of lanes, N	5	
Density, D	27.9	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Archibald Ave to Haven Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	8527	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2132	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1811	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1811	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	65.7	mi/h
Number of lanes, N	5	
Density, D	27.6	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Euclid Ave to Grove Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	9077	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2270	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2410	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2410	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	53.0	mi/h
Number of lanes, N	4	
Density, D	45.5	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Euclid Ave to Grove Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	9128	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2282	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2423	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2423	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	52.6	mi/h
Number of lanes, N	4	
Density, D	46.0	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Grove Ave to Vineyard Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	8757	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2190	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2325	pc/h/ln

---

Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2325	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	55.3	mi/h
Number of lanes, N	4	
Density, D	42.0	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: State Route 60 Westbound  
From/To: Grove Ave to Vineyard Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	8834	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2209	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2345	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2345	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	54.8	mi/h
Number of lanes, N	4	
Density, D	42.8	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Vineyard Ave to Archibald Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	8737	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2185	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2320	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2320	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	55.4	mi/h
Number of lanes, N	4	
Density, D	41.8	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: Vineyard Ave to Archibald Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	9077	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2270	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	1928	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	1928	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	63.9	mi/h
Number of lanes, N	5	
Density, D	30.2	pc/mi/ln
Level of service, LOS	D	



Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	8773	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2194	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2329	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2329	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	55.2	mi/h
Number of lanes, N	4	
Density, D	42.2	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: State Route 60 Westbound  
 From/To: West of Euclid Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

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Volume, V	9310	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2328	v
Trucks and buses	12	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.942	
Driver population factor, fp	1.00	
Flow rate, vp	2472	pc/h/ln

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Speed Inputs and Adjustments

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Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.83	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.3	mi/h
Free-flow speed, FFS	70.1	mi/h

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LOS and Performance Measures

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Flow rate, vp	2472	pc/h/ln
Free-flow speed, FFS	70.1	mi/h
Average passenger-car speed, S	51.2	mi/h
Number of lanes, N	4	
Density, D	48.3	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:  
E-mail:

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Operational Analysis  
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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: Interstate 15 Northbound  
From/To: Cantu Galleano to Limonite  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments  
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Volume, V	5938	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1485	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2082	pc/h/ln

-----  
Speed Inputs and Adjustments  
-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

-----  
LOS and Performance Measures  
-----

Flow rate, vp	2082	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	61.0	mi/h
Number of lanes, N	3	
Density, D	34.1	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: Cantu Galleano to Limonite  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

---

Flow Inputs and Adjustments

---

Volume, V	6981	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1746	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2448	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2448	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	51.9	mi/h
Number of lanes, N	3	
Density, D	47.1	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	6522	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1631	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1372	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	1372	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.7	mi/h
Number of lanes, N	5	
Density, D	19.7	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7810	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1953	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	1643	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	1643	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	67.7	mi/h
Number of lanes, N	5	
Density, D	24.3	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: AM Peak Hour  
Freeway/Direction: Interstate 15 Northbound  
From/To: South of Limonite Ave  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

---

Flow Inputs and Adjustments

---

Volume, V	7024	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1756	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2463	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2463	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	51.5	mi/h
Number of lanes, N	3	
Density, D	47.8	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:  
E-mail:

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Operational Analysis

---

Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Northbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	6878	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1720	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2412	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2412	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	53.0	mi/h
Number of lanes, N	3	
Density, D	45.5	pc/mi/ln
Level of service, LOS	F	



Phone: Fax:  
E-mail:

-----Operational Analysis-----

Analyst: Kelly Tran  
Agency or Company: Stantec Consulting Services  
Date Performed: 11/08/17  
Analysis Time Period: PM Peak Hour  
Freeway/Direction: Interstate 15 Southbound  
From/To: Cantu Galleano to Limonite  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Flow Inputs and Adjustments-----

Volume, V	7089	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1773	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2486	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2486	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	50.8	mi/h
Number of lanes, N	3	
Density, D	48.9	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: Cantu Galleano to Limonite  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	8513	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2129	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2985	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.25	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.9	mi/h
Free-flow speed, FFS	71.5	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2985	pc/h/ln
Free-flow speed, FFS	71.5	mi/h
Average passenger-car speed, S	33.0	mi/h
Number of lanes, N	3	
Density, D	90.3	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	9567	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	2392	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2516	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2516	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	49.9	mi/h
Number of lanes, N	4	
Density, D	50.4	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: North of Cantu-Galleano Ranch  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7806	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1952	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2053	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2053	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	61.6	mi/h
Number of lanes, N	4	
Density, D	33.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: AM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

---

Flow Inputs and Adjustments

---

Volume, V	6532	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1633	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2291	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

---

LOS and Performance Measures

---

Flow rate, vp	2291	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	56.2	mi/h
Number of lanes, N	3	
Density, D	40.8	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:  
E-mail:

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Operational Analysis

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Analyst: Kelly Tran  
 Agency or Company: Stantec Consulting Services  
 Date Performed: 11/08/17  
 Analysis Time Period: PM Peak Hour  
 Freeway/Direction: Interstate 15 Southbound  
 From/To: South of Limonite Ave  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

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Flow Inputs and Adjustments

---

Volume, V	7701	veh/h
Peak-hour factor, PHF	1.00	
Peak 15-min volume, v15	1926	v
Trucks and buses	10	%
Recreational vehicles	1	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.951	
Driver population factor, fp	1.00	
Flow rate, vp	2700	pc/h/ln

---

Speed Inputs and Adjustments

---

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.08	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.4	mi/h
Free-flow speed, FFS	72.0	mi/h

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LOS and Performance Measures

---

Flow rate, vp	2700	pc/h/ln
Free-flow speed, FFS	72.0	mi/h
Average passenger-car speed, S	43.9	mi/h
Number of lanes, N	3	
Density, D	61.5	pc/mi/ln
Level of service, LOS	F	

## **HCS MERGE/DIVERGE ANALYSIS**

**EXISTING (2017) AM/PM PEAK HOUR**



Phone: Fax:  
E-mail:

-----Merge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5726	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	414	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5726	414		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1523	110		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6091	440	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.163 Using Equation 4

FM

v = v (P ) = 992 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6531	9600	No
FO			
v or v	2549 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2436	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2876	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 23.7$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.345	
	S	
Space mean speed in ramp influence area,	S = 60.3	mph
	R	
Space mean speed in outer lanes,	S = 65.2	mph
	0	
Space mean speed for all vehicles,	S = 63.0	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5884	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	703	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5884	703		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1565	187		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6260	748	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.124 Using Equation 4

FM

v = v (P ) = 778 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7008	9600	No
FO			
v or v	2741 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2504	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3252	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 26.5 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.377	
	S	
Space mean speed in ramp influence area,	S = 59.4	mph
	R	
Space mean speed in outer lanes,	S = 65.0	mph
	0	
Space mean speed for all vehicles,	S = 62.3	mph

-----

Phone: Fax:  
 E-mail:

-----Merge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7201	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	582	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7201	582		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1915	155		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7661	619	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.140 Using Equation 4

FM

v = v (P ) = 1076 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8280	9600	No
FO			
v or v	3292 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3064	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3683	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 30.2 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.434	
	S	
Space mean speed in ramp influence area,	S = 57.8	mph
	R	
Space mean speed in outer lanes,	S = 63.5	mph
	0	
Space mean speed for all vehicles,	S = 60.9	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7210	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	666	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7210	666		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1918	177		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7670	709	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.129 Using Equation 4

FM

v = v (P ) = 991 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8379	9600	No
FO			
v or v	3339 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3068	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3777	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 30.9$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.450	
	S	
Space mean speed in ramp influence area,	S = 57.4	mph
	R	
Space mean speed in outer lanes,	S = 63.5	mph
	0	
Space mean speed for all vehicles,	S = 60.6	mph

-----



Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Euclid Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5765	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	753	vph	
Length of first accel/decel lane	560	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5765	753		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1533	200		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6133	801	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.118 Using Equation 4

FM

v = v (P ) = 722 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6934	9600	No
FO			
v or v	2705 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 733	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	1534	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 13.6 pc/mi/ln

R R 12 A B

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.300	
	S	
Space mean speed in ramp influence area,	S = 61.6	mph
	R	
Space mean speed in outer lanes,	S = 61.1	mph
	0	
Space mean speed for all vehicles,	S = 61.2	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Euclid Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6266	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	727	vph	
Length of first accel/decel lane	560	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6266	727		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1666	193		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6666	773	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.121 Using Equation 4

FM

v = v (P ) = 808 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7439	9600	No
FO			
v or v	2929 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 1266	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2039	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 17.5 pc/mi/ln

R R 12 A B

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.312	
	S	
Space mean speed in ramp influence area,	S = 61.3	mph
	R	
Space mean speed in outer lanes,	S = 61.1	mph
	0	
Space mean speed for all vehicles,	S = 61.1	mph

-----

Phone: Fax:  
E-mail:

-----Merge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Euclid Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7121	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	733	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7121	733		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1894	195		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7576	780	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.120 Using Equation 4

FM

v = v (P ) = 911 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8356	9600	No
FO			
v or v	3332 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3030	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3810	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 31.1 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.455	
	S	
Space mean speed in ramp influence area,	S = 57.2	mph
	R	
Space mean speed in outer lanes,	S = 63.6	mph
	0	
Space mean speed for all vehicles,	S = 60.5	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Euclid Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7246	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	703	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7246	703		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1927	187		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7709	748	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.124 Using Equation 4

FM

v = v (P ) = 958 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8457	9600	No
FO			
v or v	3375 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3083	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3831	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 31.3 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.459	
	S	
Space mean speed in ramp influence area,	S = 57.1	mph
	R	
Space mean speed in outer lanes,	S = 63.4	mph
	0	
Space mean speed for all vehicles,	S = 60.4	mph

-----



Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5821	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	493	vph	
Length of first accel/decel lane	700	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5821	493		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1548	131		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6193	524	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.152 Using Equation 4

FM

v = v (P ) = 943 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6717	9600	No
FO			
v or v	2625 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2477	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3001	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 24.3 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.350	
	S	
Space mean speed in ramp influence area,	S = 60.2	mph
	R	
Space mean speed in outer lanes,	S = 65.1	mph
	0	
Space mean speed for all vehicles,	S = 62.8	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6107	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	668	vph	
Length of first accel/decel lane	700	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6107	668		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1624	178		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6497	711	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.129 Using Equation 4

FM

v = v (P ) = 838 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7208	9600	No
FO			
v or v	2829 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2598	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3309	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 26.6 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.379	
	S	
Space mean speed in ramp influence area,	S = 59.4	mph
	R	
Space mean speed in outer lanes,	S = 64.8	mph
	0	
Space mean speed for all vehicles,	S = 62.2	mph

-----

Phone: Fax:  
E-mail:

-----Merge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7352	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	645	vph	
Length of first accel/decel lane	510	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7352	645		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1955	172		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7821	686	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.132 Using Equation 4

FM

v = v (P ) = 1033 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8507	9600	No
FO			
v or v	3394 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3128	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3814	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 31.7 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.462	
	S	
Space mean speed in ramp influence area,	S = 57.1	mph
	R	
Space mean speed in outer lanes,	S = 63.2	mph
	0	
Space mean speed for all vehicles,	S = 60.3	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7251	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	842	vph	
Length of first accel/decel lane	510	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7251	842		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1928	224		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7714	896	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.106 Using Equation 4

FM

v = v (P ) = 816 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8610	9600	No
FO			
v or v	3449 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3085	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3981	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 32.9 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.494	
	S	
Space mean speed in ramp influence area,	S = 56.2	mph
	R	
Space mean speed in outer lanes,	S = 63.4	mph
	0	
Space mean speed for all vehicles,	S = 59.8	mph

-----



Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4288	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	2		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	707	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane	1500	ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4288	707		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1140	188		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4562	752	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.555 Using Equation 0

FM

v = v (P ) = 2532 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5314	7200	No
FO			
v or v	2030 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2606	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3358	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 3.1 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence A

----- Speed Estimation -----

Intermediate speed variable,	M = 0.118	
	S	
Space mean speed in ramp influence area,	S = 66.7	mph
	R	
Space mean speed in outer lanes,	S = 64.8	mph
	0	
Space mean speed for all vehicles,	S = 66.0	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4330	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	2		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	621	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane	1500	ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4330	621		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1152	165		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4606	661	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.555 Using Equation 0

FM

v = v (P ) = 2556 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5267	7200	No
FO			
v or v	2050 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2632	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3293	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 2.6 pc/mi/ln  
R R 12 A

Level of service for ramp-freeway junction areas of influence A

----- Speed Estimation -----

Intermediate speed variable,	M = 0.111	
	S	
Space mean speed in ramp influence area,	S = 66.9	mph
	R	
Space mean speed in outer lanes,	S = 64.7	mph
	0	
Space mean speed for all vehicles,	S = 66.1	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5253	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	141	vph	
Length of first accel/decel lane	810	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5253	141		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1397	38		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5588	150	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.199 Using Equation 4

FM

v = v (P ) = 1112 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5738	9600	No
FO			
v or v	2238 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2235	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2385	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 18.9 pc/mi/ln

R R 12 A B

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.307	
	S	
Space mean speed in ramp influence area,	S = 61.4	mph
	R	
Space mean speed in outer lanes,	S = 65.8	mph
	0	
Space mean speed for all vehicles,	S = 63.9	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5382	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	308	vph	
Length of first accel/decel lane	810	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5382	308		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1431	82		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5726	328	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.177 Using Equation 4

FM

v = v (P ) = 1012 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6054	9600	No
FO			
v or v	2357 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2290	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2618	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 20.7 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.318	
	S	
Space mean speed in ramp influence area,	S = 61.1	mph
	R	
Space mean speed in outer lanes,	S = 65.6	mph
	0	
Space mean speed for all vehicles,	S = 63.6	mph

-----



Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	3982	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1013	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3982	1013		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1059	269		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4236	1078	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.595 Using Equation 1

FM

v = v (P ) = 2522 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5314	7200	No
FO			
v or v	1714 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2522	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3600	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 29.0$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.419	
	S	
Space mean speed in ramp influence area,	S = 58.3	mph
	R	
Space mean speed in outer lanes,	S = 65.6	mph
	0	
Space mean speed for all vehicles,	S = 60.5	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4332	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	619	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4332	619		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1152	165		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4609	659	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.595 Using Equation 1

FM

v = v (P ) = 2744 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5268	7200	No
FO			
v or v	1865 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2744	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3403	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.7 pc/mi/ln  
R R 12 A C  
Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.393	
	S	
Space mean speed in ramp influence area,	S = 59.0	mph
	R	
Space mean speed in outer lanes,	S = 65.1	mph
	0	
Space mean speed for all vehicles,	S = 61.0	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4469	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1035	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4469	1035		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1189	275		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4754	1101	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.594 Using Equation 1

FM

v = v (P ) = 2825 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5855	7200	No
FO			
v or v	1929 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2825	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3926	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 31.9 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.477	
	S	
Space mean speed in ramp influence area,	S = 56.6	mph
	R	
Space mean speed in outer lanes,	S = 64.9	mph
	0	
Space mean speed for all vehicles,	S = 59.1	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5037	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	768	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5037	768		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1340	204		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5359	817	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.594 Using Equation 1

FM

v = v (P ) = 3184 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6176	7200	No
FO			
v or v	2175 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3184	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4001	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 32.6 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.492	
	S	
Space mean speed in ramp influence area,	S = 56.2	mph
	R	
Space mean speed in outer lanes,	S = 64.0	mph
	0	
Space mean speed for all vehicles,	S = 58.7	mph

-----



Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6343	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	615	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6343	615		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1687	164		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6748	654	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.436 Using Equation 8  
FD  
 $v_{12} = v_R + (v_F - v_R) P_{FD} = 3311 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6748	9600	No
$v_{FO} = v_F - v_R$	6094	9600	No
$v_R$	654	2000	No
$v_3 \text{ or } v_{av34}$	1718 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3311$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3311	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 28.5 \text{ pc/mi/ln}$   
Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.487	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 74.0	mph
Space mean speed for all vehicles,	S = 64.1	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6806	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	530	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6806	530		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1810	141		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7240	564	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3475$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7240	9600	No
$v_{FO} = v_F - v_R$	6676	9600	No
$v_R$	564	2000	No
$v_3$ or $v_{av34}$	1882 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3475$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3475	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 30.0$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.479	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.6	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.4	mph
Space mean speed for all vehicles,	S = 64.2	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	5		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7533	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	638	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7533	638		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2003	170		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8014	679	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3179$  pc/h  
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6412	9600	No
$v_{FO} = v_F - v_R$	5733	9600	No
$v_R$	679	2000	No
$v_3$ or $v_{av34}$	1616 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3179$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3179	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 18.1$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	D = 0.489	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 74.4	mph
Space mean speed for all vehicles,	S = 64.2	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	5		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7623	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	459	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7623	459		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2027	122		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8110	488	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3104$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6488	9600	No
$v_{FO} = v_F - v_R$	6000	9600	No
$v_R$	488	2000	No
$v_3$ or $v_{av34}$	1692 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3104$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3104	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 17.4$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	D = 0.472	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.8	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 74.1	mph
Space mean speed for all vehicles,	S = 64.7	mph

-----



Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Euclid Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6402	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	670	vph	
Length of first accel/decel lane	560	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6402	670		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1703	178		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6811	713	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3372$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{F1}$	6811	9600	No
$v_{12} = v_{F0} - v_{FR}$	6098	9600	No
$v_{12}$	713	2000	No
$v_{12}$ or $v_{3av34}$	1719 pc/h	(Equation 13-14 or 13-17)	
Is $v_{12}$ or $v_{3av34} > 2700$ pc/h?		No	
Is $v_{12}$ or $v_{3av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3372$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3372	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 28.2$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.492	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.2	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 74.0	mph
Space mean speed for all vehicles,	S = 64.0	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Euclid Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6868	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	583	vph
Length of first accel/decel lane	560	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6868	583		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1827	155		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7306	620	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3535$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	7306	9600	No
$v_{Fi} = v_F - v_{FO}$	6686	9600	No
$v_R$	620	2000	No
$v_3$ or $v_{av34}$	1885 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3535$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3535	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 29.6$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.484	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.5	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.3	mph
Space mean speed for all vehicles,	S = 64.1	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Wstbound  
 Junction: Euclid Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7997	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	848	vph	
Length of first accel/decel lane	485	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7997	848		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2127	226		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8507	902	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 4218 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{F1}$	8507	9600	No
$v_{FO} = v_F - v_R$	7605	9600	No
$v_R$	902	2000	No
$v_3$ or $v_{av34}$	2144 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4218$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4218	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 36.2 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.509	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.7	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.3	mph
Space mean speed for all vehicles,	S = 63.0	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Wstbound  
 Junction: Euclid Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8093	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	766	vph	
Length of first accel/decel lane	485	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8093	766		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2152	204		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8610	815	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4214$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8610	9600	No
$v_{FO} = v_F - v_R$	7795	9600	No
$v_R$	815	2000	No
$v_3$ or $v_{av34}$	2198 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4214$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4214	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 36.1$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.501	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.0	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.1	mph
Space mean speed for all vehicles,	S = 63.2	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6518	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	745	vph	
Length of first accel/decel lane	480	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6518	745		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1734	198		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6934	793	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3470$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	6934	9600	No
$v_{FO} = v_F - v_R$	6141	9600	No
$v_R$	793	2000	No
$v_3$ or $v_{av34}$	1732 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3470$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3470	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 29.8$  pc/mi/ln  
 R 12 D

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.499	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.0	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.9	mph
Space mean speed for all vehicles,	S = 63.7	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6993	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	607	vph	
Length of first accel/decel lane	480	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6993	607		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1860	161		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7439	646	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 3608 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7439	9600	No
$v_{FO} = v_F - v_R$	6793	9600	No
$v_R$	646	2000	No
$v_3 \text{ or } v_{av34}$	1915 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3608$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3608	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 31.0 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.486	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.2	mph
Space mean speed for all vehicles,	S = 64.0	mph

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Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7747	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	613	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7747	613		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2060	163		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8241	652	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3961$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8241	9600	No
$v_{FO} = v_F - v_R$	7589	9600	No
$v_R$	652	2000	No
$v_3$ or $v_{av34}$	2140 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3961$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3961	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 34.1$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.487	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.3	mph
Space mean speed for all vehicles,	S = 63.7	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7840	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	513	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7840	513		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2085	136		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8340	546	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 3944 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8340	9600	No
$v_{FO} = v_F - v_R$	7794	9600	No
$v_R$	546	2000	No
$v_3 \text{ or } v_{av34}$	2198 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3944$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3944	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 34.0 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.477	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.6	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.1	mph
Space mean speed for all vehicles,	S = 63.9	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4995	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	257	vph	
Length of first accel/decel lane	400	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4995	257		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1328	68		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5314	273	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.615 Using Equation 5  
FD  
 $v_{12} = v_R + (v_F - v_R) P = 3371 \text{ pc/h}$   
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	5314	7200	No
$v_{FO} = v_F - v_R$	5041	7200	No
$v_R$	273	2000	No
$v_3 \text{ or } v_{av34}$	1943 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3371$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3371	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 29.6 \text{ pc/mi/ln}$   
Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.453	
Space mean speed in ramp influence area,	S <sub>R</sub> = 57.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.1	mph
Space mean speed for all vehicles,	S = 62.2	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4951	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	176	vph	
Length of first accel/decel lane	400	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4951	176		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1317	47		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5267	187	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.620 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3335$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	5267	7200	No
$v_{FO} = v_F - v_R$	5080	7200	No
$v_R$	187	2000	No
$v_3$ or $v_{av34}$	1932 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3335$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3335	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 29.3$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.445	
Space mean speed in ramp influence area,	S <sub>R</sub> = 57.5	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.2	mph
Space mean speed for all vehicles,	S = 62.4	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano Ave SB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5394	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	733	vph	
Length of first accel/decel lane	780	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5394	733		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1435	195		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5738	780	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.581 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 3659 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5738	7200	No
$v_{FO} = v_F - v_R$	4958	7200	No
$v_R$	780	2000	No
$v_3 \text{ or } v_{av34}$	2079 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3659$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3659	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 28.7 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.498	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.6	mph
Space mean speed for all vehicles,	S = 61.1	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano Ave SB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5690	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	818	vph	
Length of first accel/decel lane	780	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5690	818		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1513	218		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6053	870	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.569 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3817$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	6053	7200	No
$v_{FO} = v_F - v_R$	5183	7200	No
$v_R$	870	2000	No
$v_3$ or $v_{av34}$	2236 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3817$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3817	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 30.1$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.506	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.8	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.0	mph
Space mean speed for all vehicles,	S = 60.9	mph

-----



Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

----- Diverge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

----- Freeway Data -----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5097	vph	

----- Off Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	503	vph	
Length of first accel/decel lane	405	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5097	503		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1356	134		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5422	535	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.600 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3466$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5422	7200	No
$v_{FO} = v_F - v_R$	4887	7200	No
$v_R$	535	2000	No
$v_3$ or $v_{av34}$	1956 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3466$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3466	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 30.4$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.476	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.7	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.1	mph
Space mean speed for all vehicles,	S = 61.7	mph

-----

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5052	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	968	vph	
Length of first accel/decel lane	405	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5052	968		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1344	257		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5374	1030	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.578 Using Equation 5  
FD  
 $v_{12} = v_R + (v_F - v_R) P = 3542$  pc/h  
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	5374	7200	No
$v_{FO} = v_F - v_R$	4344	7200	No
$v_R$	1030	2000	No
$v_3$ or $v_{av34}$	1832 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3542$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3542	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 31.1$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.521	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.5	mph
Space mean speed for all vehicles,	S = 60.5	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5394	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	545	vph	
Length of first accel/decel lane	420	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5394	545		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1435	145		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5738	580	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.590 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 3623 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	5738	7200	No
$v_{FO} = v_F - v_R$	5158	7200	No
$v_R$	580	2000	No
$v_3 \text{ or } v_{av34}$	2115 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3623$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3623	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 31.6 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.480	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.6	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.4	mph
Space mean speed for all vehicles,	S = 61.5	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 06/19/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: 2017  
 Description: WOCC Mainline Analysis - Existing 2017 Conditions

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5690	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	756	vph	
Length of first accel/decel lane	420	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5690	756		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1513	201		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6053	804	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.572 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3805$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	6053	7200	No
$v_{FO} = v_F - v_R$	5249	7200	No
$v_R$	804	2000	No
$v_3$ or $v_{av34}$	2248 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3805$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3805	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 33.2$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.500	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.0	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.9	mph
Space mean speed for all vehicles,	S = 61.0	mph

-----



**EXISTING PLUS PROJECT AM/PM PEAK HOUR**

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5726	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	456	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5726	456		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1523	121		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6091	485	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.157 Using Equation 4

FM

v = v (P ) = 957 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6576	9600	No
FO			
v or v	2567 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2436	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2921	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 24.0 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.349	
	S	
Space mean speed in ramp influence area,	S = 60.2	mph
	R	
Space mean speed in outer lanes,	S = 65.2	mph
	0	
Space mean speed for all vehicles,	S = 62.9	mph

-----

Phone: Fax:  
E-mail:

-----Merge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak Hour  
Freeway/Dir of Travel: State Route 60 Eastbound  
Junction: Archibald Ave EB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5884	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	801	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5884	801		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1565	213		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6260	852	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.111 Using Equation 4

FM

v = v (P ) = 697 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7112	9600	No
FO			
v or v	2781 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2504	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3356	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.2 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.388	
	S	
Space mean speed in ramp influence area,	S = 59.1	mph
	R	
Space mean speed in outer lanes,	S = 65.0	mph
	0	
Space mean speed for all vehicles,	S = 62.1	mph

-----

Phone: Fax:  
E-mail:

-----Merge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Archibald Ave WB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7201	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	582	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7201	582		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1915	155		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7661	619	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.140 Using Equation 4

FM

v = v (P ) = 1076 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8280	9600	No
FO			
v or v	3292 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3064	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3683	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 30.2$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.434	
	S	
Space mean speed in ramp influence area,	S = 57.8	mph
	R	
Space mean speed in outer lanes,	S = 63.5	mph
	0	
Space mean speed for all vehicles,	S = 60.9	mph

-----

Phone: Fax:  
E-mail:

-----Merge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak Hour  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Archibald Ave WB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7210	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	666	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7210	666		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1918	177		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7670	709	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.129 Using Equation 4

FM

v = v (P ) = 991 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8379	9600	No
FO			
v or v	3339 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3068	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3777	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 30.9$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.450	
	S	
Space mean speed in ramp influence area,	S = 57.4	mph
	R	
Space mean speed in outer lanes,	S = 63.5	mph
	0	
Space mean speed for all vehicles,	S = 60.6	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: State Route 60 Eastbound  
Junction: Euclid Ave EB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5908	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	753	vph	
Length of first accel/decel lane	560	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5908	753		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1571	200		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6285	801	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.118 Using Equation 4

FM

v = v (P ) = 740 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7086	9600	No
FO			
v or v	2772 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2514	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3315	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.5 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.389	
	S	
Space mean speed in ramp influence area,	S = 59.1	mph
	R	
Space mean speed in outer lanes,	S = 65.0	mph
	0	
Space mean speed for all vehicles,	S = 62.1	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak Hour  
Freeway/Dir of Travel: State Route 60 Eastbound  
Junction: Euclid Ave EB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6308	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	727	vph
Length of first accel/decel lane	560	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6308	727		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1678	193		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6711	773	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.121 Using Equation 4

FM

v = v (P ) = 813 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7484	9600	No
FO			
v or v	2949 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2684	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3457	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 28.6 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.406	
	S	
Space mean speed in ramp influence area,	S = 58.6	mph
	R	
Space mean speed in outer lanes,	S = 64.6	mph
	0	
Space mean speed for all vehicles,	S = 61.7	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Euclid Ave WB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7145	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	757	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7145	757		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1900	201		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7601	805	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.117 Using Equation 4

FM

v = v (P ) = 891 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8406	9600	No
FO			
v or v	3355 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3040	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3845	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 31.4 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.462	
	S	
Space mean speed in ramp influence area,	S = 57.1	mph
	R	
Space mean speed in outer lanes,	S = 63.6	mph
	0	
Space mean speed for all vehicles,	S = 60.4	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak Hour  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Euclid Ave WB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7281	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	728	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7281	728		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1936	194		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7746	774	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.121 Using Equation 4

FM

v = v (P ) = 938 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8520	9600	No
FO			
v or v	3404 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3098	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3872	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 31.6$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.467	
	S	
Space mean speed in ramp influence area,	S = 56.9	mph
	R	
Space mean speed in outer lanes,	S = 63.3	mph
	0	
Space mean speed for all vehicles,	S = 60.3	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed:  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5821	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	493	vph	
Length of first accel/decel lane	700	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5821	493		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1548	131		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6193	524	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.152 Using Equation 4

FM

v = v (P ) = 943 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6717	9600	No
FO			
v or v	2625 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2477	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3001	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 24.3 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.350	
	S	
Space mean speed in ramp influence area,	S = 60.2	mph
	R	
Space mean speed in outer lanes,	S = 65.1	mph
	0	
Space mean speed for all vehicles,	S = 62.8	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6107	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	668	vph
Length of first accel/decel lane	700	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6107	668		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1624	178		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6497	711	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.129 Using Equation 4

FM

v = v (P ) = 838 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7208	9600	No
FO			
v or v	2829 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2598	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3309	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 26.6 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.379	
	S	
Space mean speed in ramp influence area,	S = 59.4	mph
	R	
Space mean speed in outer lanes,	S = 64.8	mph
	0	
Space mean speed for all vehicles,	S = 62.2	mph

-----

Phone: Fax:  
E-mail:

-----Merge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Grove Ave WB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7352	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	669	vph	
Length of first accel/decel lane	510	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7352	669		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1955	178		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7821	712	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.129 Using Equation 4

FM

v = v (P ) = 1007 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8533	9600	No
FO			
v or v	3407 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3128	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3840	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 31.9 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.467	
	S	
Space mean speed in ramp influence area,	S = 56.9	mph
	R	
Space mean speed in outer lanes,	S = 63.2	mph
	0	
Space mean speed for all vehicles,	S = 60.2	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak Hour  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Grove Ave WB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7251	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	877	vph	
Length of first accel/decel lane	510	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7251	877		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1928	233		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7714	933	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.101 Using Equation 4

FM

v = v (P ) = 780 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8647	9600	No
FO			
v or v	3467 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3085	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4018	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 33.2$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.502	
	S	
Space mean speed in ramp influence area,	S = 55.9	mph
	R	
Space mean speed in outer lanes,	S = 63.4	mph
	0	
Space mean speed for all vehicles,	S = 59.7	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4291	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	2		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	753	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane	1500	ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4291	753		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1141	200		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4565	801	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.555 Using Equation 0

FM

v = v (P ) = 2534 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5366	7200	No
FO			
v or v	2031 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2608	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3409	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 3.5$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence A

----- Speed Estimation -----

Intermediate speed variable,	M = 0.124	
	S	
Space mean speed in ramp influence area,	S = 66.5	mph
	R	
Space mean speed in outer lanes,	S = 64.8	mph
	0	
Space mean speed for all vehicles,	S = 65.9	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4335	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	2		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	739	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane	1500	ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4335	739		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1153	197		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4612	786	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.555 Using Equation 0

FM

v = v (P ) = 2560 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5398	7200	No
FO			
v or v	2052 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2635	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3421	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 3.6 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence A

----- Speed Estimation -----

Intermediate speed variable,	M = 0.125	
	S	
Space mean speed in ramp influence area,	S = 66.5	mph
	R	
Space mean speed in outer lanes,	S = 64.7	mph
	0	
Space mean speed for all vehicles,	S = 65.8	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5261	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	141	vph	
Length of first accel/decel lane	810	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5261	141		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1399	38		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5597	150	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.199 Using Equation 4

FM

v = v (P ) = 1114 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5747	9600	No
FO			
v or v	2241 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2238	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2388	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 19.0 pc/mi/ln

R R 12 A B

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.307	
	S	
Space mean speed in ramp influence area,	S = 61.4	mph
	R	
Space mean speed in outer lanes,	S = 65.8	mph
	0	
Space mean speed for all vehicles,	S = 63.9	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak Hour  
Freeway/Dir of Travel: Interstate 15 Southbound  
Junction: Cantu-Galleano SB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5472	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	308	vph	
Length of first accel/decel lane	810	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5472	308		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1455	82		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5821	328	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.177 Using Equation 4

FM

v = v (P ) = 1029 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6149	9600	No
FO			
v or v	2396 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2328	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2656	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 21.0$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.320	
	S	
Space mean speed in ramp influence area,	S = 61.0	mph
	R	
Space mean speed in outer lanes,	S = 65.5	mph
	0	
Space mean speed for all vehicles,	S = 63.5	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: Interstate 15 Northbound  
Junction: Limonite Ave NB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	3982	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1016	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3982	1016		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1059	270		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4236	1081	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.595 Using Equation 1

FM

v = v (P ) = 2522 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5317	7200	No
FO			
v or v	1714 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2522	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3603	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 29.1 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.419	
	S	
Space mean speed in ramp influence area,	S = 58.3	mph
	R	
Space mean speed in outer lanes,	S = 65.6	mph
	0	
Space mean speed for all vehicles,	S = 60.4	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4332	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	624	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4332	624		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1152	166		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4609	664	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.595 Using Equation 1

FM

v = v (P ) = 2744 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5273	7200	No
FO			
v or v	1865 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2744	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3408	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.7 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.394	
	S	
Space mean speed in ramp influence area,	S = 59.0	mph
	R	
Space mean speed in outer lanes,	S = 65.1	mph
	0	
Space mean speed for all vehicles,	S = 61.0	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: Interstate 15 Southbound  
Junction: Limonite Ave SB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4469	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1063	vph
Length of first accel/decel lane	595	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4469	1063		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1189	283		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4754	1131	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.594 Using Equation 1

FM

v = v (P ) = 2825 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	5885	7200	No
FO			
v or v	1929 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2825	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3956	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 32.1$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.483	
	S	
Space mean speed in ramp influence area,	S = 56.5	mph
	R	
Space mean speed in outer lanes,	S = 64.9	mph
	0	
Space mean speed for all vehicles,	S = 59.0	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5037	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	772	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5037	772		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1340	205		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5359	821	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.594 Using Equation 1

FM

v = v (P ) = 3184 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6180	7200	No
FO			
v or v	2175 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3184	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4005	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 32.6 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.493	
	S	
Space mean speed in ramp influence area,	S = 56.2	mph
	R	
Space mean speed in outer lanes,	S = 64.0	mph
	0	
Space mean speed for all vehicles,	S = 58.7	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak  
Freeway/Dir of Travel: State Route 60 Eastbound  
Junction: Archibald Ave EB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6343	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	615	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6343	615		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1687	164		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6748	654	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 3311 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	6748	9600	No
$v_{FO} = v_F - v_R$	6094	9600	No
$v_R$	654	2000	No
$v_3 \text{ or } v_{av34}$	1718 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3311$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3311	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 28.5 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.487	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 74.0	mph
Space mean speed for all vehicles,	S = 64.1	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6806	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	530	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6806	530		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1810	141		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7240	564	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3475$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7240	9600	No
$v_{FO} = v_F - v_R$	6676	9600	No
$v_R$	564	2000	No
$v_3$ or $v_{av34}$	1882 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3475$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3475	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 30.0$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.479	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.6	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.4	mph
Space mean speed for all vehicles,	S = 64.2	mph

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Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	5		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7667	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	772	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7667	772		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2039	205		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8156	821	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3308$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6525	9600	No
$v_{FO} = v_F - v_R$	5704	9600	No
$v_R$	821	2000	No
$v_3$ or $v_{av34}$	1608 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3308$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3308	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 19.2$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	D = 0.502	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.9	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 74.4	mph
Space mean speed for all vehicles,	S = 63.7	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Archibald Ave WB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	5		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7665	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	501	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7665	501		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2039	133		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8154	533	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3145$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6524	9600	No
$v_{FO} = v_F - v_R$	5991	9600	No
$v_R$	533	2000	No
$v_3$ or $v_{av34}$	1689 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3145$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3145	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 17.8$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	D = 0.476	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.7	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 74.1	mph
Space mean speed for all vehicles,	S = 64.5	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak  
Freeway/Dir of Travel: State Route 60 Eastbound  
Junction: Euclid Ave EB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6580	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	705	vph	
Length of first accel/decel lane	560	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6580	705		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1750	188		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7000	750	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3475$  pc/h  
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7000	9600	No
$v_{FO} = v_F - v_R$	6250	9600	No
$v_R$	750	2000	No
$v_3$ or $v_{av34}$	1762 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3475$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3475	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 29.1$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.495	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.8	mph
Space mean speed for all vehicles,	S = 63.8	mph

-----

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Euclid Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6889	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	604	vph	
Length of first accel/decel lane	560	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6889	604		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1832	161		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7329	643	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3558$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7329	9600	No
$v_{FO} = v_F - v_R$	6686	9600	No
$v_R$	643	2000	No
$v_3$ or $v_{av34}$	1885 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3558$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3558	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 29.8$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.486	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.3	mph
Space mean speed for all vehicles,	S = 64.0	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: State Route 60 Wstbound  
Junction: Euclid Ave WB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	8021	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	848	vph
Length of first accel/decel lane	485	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8021	848		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2133	226		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8533	902	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 4229 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	8533	9600	No
$v_{FO} = v_F - v_R$	7631	9600	No
$v_R$	902	2000	No
$v_3 \text{ or } v_{av34}$	2152 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4229$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4229	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 36.3 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.509	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.7	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.3	mph
Space mean speed for all vehicles,	S = 63.0	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: State Route 60 Wstbound  
Junction: Euclid Ave WB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8128	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	766	vph	
Length of first accel/decel lane	485	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8128	766		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2162	204		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2	



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8647	815	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.436 Using Equation 8  
FD  
 $v_{12} = v_R + (v_F - v_R) P = 4230 \text{ pc/h}$   
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8647	9600	No
$v_{FO} = v_F - v_R$	7832	9600	No
$v_R$	815	2000	No
$v_3 \text{ or } v_{av34}$	2208 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4230$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4230	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 36.3 \text{ pc/mi/ln}$   
Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.501	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.0	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.1	mph
Space mean speed for all vehicles,	S = 63.2	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6661	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	888	vph	
Length of first accel/decel lane	480	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6661	888		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1772	236		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7086	945	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3622$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7086	9600	No
$v_{FO} = v_F - v_R$	6141	9600	No
$v_R$	945	2000	No
$v_3$ or $v_{av34}$	1732 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3622$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3622	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 31.1$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.513	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.6	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.9	mph
Space mean speed for all vehicles,	S = 63.3	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7035	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	649	vph	
Length of first accel/decel lane	480	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7035	649		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1871	173		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7484	690	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3652$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	7484	9600	No
$v_{FO} = v_F - v_R$	6794	9600	No
$v_R$	690	2000	No
$v_3$ or $v_{av34}$	1916 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3652$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3652	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 31.3$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.490	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.2	mph
Space mean speed for all vehicles,	S = 63.8	mph

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Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7747	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	613	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7747	613		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2060	163		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8241	652	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3961 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8241	9600	No
$v_{FO} = v_F - v_R$	7589	9600	No
$v_R$	652	2000	No
$v_3 \text{ or } v_{av34}$	2140 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3961$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3961	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 34.1 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.487	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.3	mph
Space mean speed for all vehicles,	S = 63.7	mph

-----

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7840	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	513	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7840	513		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2085	136		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8340	546	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3944$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8340	9600	No
$v_{FO} = v_F - v_R$	7794	9600	No
$v_R$	546	2000	No
$v_3$ or $v_{av34}$	2198 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3944$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3944	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 34.0$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.477	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.6	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.1	mph
Space mean speed for all vehicles,	S = 63.9	mph

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Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4998	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	257	vph	
Length of first accel/decel lane	400	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4998	257		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1329	68		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5317	273	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.615 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3373 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	5317	7200	No
$v_{FO} = v_F - v_R$	5044	7200	No
$v_R$	273	2000	No
$v_3 \text{ or } v_{av34}$	1944 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3373$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3373	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 29.7 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.453	
Space mean speed in ramp influence area,	S <sub>R</sub> = 57.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.1	mph
Space mean speed for all vehicles,	S = 62.2	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4956	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	176	vph	
Length of first accel/decel lane	400	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4956	176		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1318	47		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5272	187	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.620 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3338$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	5272	7200	No
$v_{FO} = v_F - v_R$	5085	7200	No
$v_R$	187	2000	No
$v_3$ or $v_{av34}$	1934 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3338$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3338	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 29.4$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.445	
Space mean speed in ramp influence area,	S <sub>R</sub> = 57.5	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.1	mph
Space mean speed for all vehicles,	S = 62.4	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak  
Freeway/Dir of Travel: Interstate 15 Southbound  
Junction: Cantu-Galleano Ave SB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5569	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	900	vph	
Length of first accel/decel lane	780	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5569	900		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1481	239		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5924	957	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.568 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3778$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	5924	7200	No
$v_{FO} = v_F - v_R$	4967	7200	No
$v_R$	957	2000	No
$v_3$ or $v_{av34}$	2146 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3778$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3778	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 29.7$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.514	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.6	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.3	mph
Space mean speed for all vehicles,	S = 60.7	mph

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Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano Ave SB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5829	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	867	vph	
Length of first accel/decel lane	780	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5829	867		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1550	231		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6201	922	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.563 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3892$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	6201	7200	No
$v_{FO} = v_F - v_R$	5279	7200	No
$v_R$	922	2000	No
$v_3$ or $v_{av34}$	2309 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3892$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3892	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 30.7$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.511	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.7	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.7	mph
Space mean speed for all vehicles,	S = 60.7	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

----- Diverge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5204	vph	

----- Off Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	610	vph	
Length of first accel/decel lane	405	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5204	610		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1384	162		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5536	649	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.592 Using Equation 5  
FD  
 $v_{12} = v_R + (v_F - v_R) P_{FD} = 3541 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5536	7200	No
$v_{FO} = v_F - v_R$	4887	7200	No
$v_R$	649	2000	No
$v_3 \text{ or } v_{av34}$	1995 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3541$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3541	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 31.1 \text{ pc/mi/ln}$   
Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.486	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.9	mph
Space mean speed for all vehicles,	S = 61.4	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

----- Diverge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5088	vph	

----- Off Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	1004	vph	
Length of first accel/decel lane	405	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5088	1004		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1353	267		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5413	1068	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.576 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 3569 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5413	7200	No
$v_{FO} = v_F - v_R$	4345	7200	No
$v_R$	1068	2000	No
$v_3 \text{ or } v_{av34}$	1844 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3569$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3569	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 31.3 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.524	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.5	mph
Space mean speed for all vehicles,	S = 60.4	mph

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Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Existing 2017 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5402	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	553	vph	
Length of first accel/decel lane	420	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5402	553		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1437	147		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5747	588	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.589 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3628$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	5747	7200	No
$v_{FO} = v_F - v_R$	5159	7200	No
$v_R$	588	2000	No
$v_3$ or $v_{av34}$	2119 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3628$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3628	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 31.7$  pc/mi/ln  
 R 12 D

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.481	
Space mean speed in ramp influence area,	S = 56.5	mph
Space mean speed in outer lanes,	S = 72.4	mph
Space mean speed for all vehicles,	S = 61.5	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: Interstate 15 Southbound  
Junction: Limonite Ave SB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Existing 2017 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5780	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	846	vph	
Length of first accel/decel lane	420	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5780	846		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1537	225		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6149	900	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.565 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3865$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6149	7200	No
$v_{FO} = v_F - v_R$	5249	7200	No
$v_R$	900	2000	No
$v_3$ or $v_{av34}$	2284 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3865$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3865	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 33.7$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.509	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.7	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.8	mph
Space mean speed for all vehicles,	S = 60.8	mph

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**BASELINE (2023) PLUS PROJECT AM/PM PEAK HOUR**

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5966	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	626	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5966	626		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1587	166		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6347	666	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.135 Using Equation 4

FM

v = v (P ) = 854 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7013	9600	No
FO			
v or v	2746 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2538	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3204	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 26.1 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.372	
	S	
Space mean speed in ramp influence area,	S = 59.6	mph
	R	
Space mean speed in outer lanes,	S = 64.9	mph
	0	
Space mean speed for all vehicles,	S = 62.4	mph

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Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6051	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1043	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6051	1043		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1609	277		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6437	1110	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.079 Using Equation 4

FM

v = v (P ) = 509 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7547	9600	No
FO			
v or v	2964 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2574	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3684	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 29.7$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.431	
	S	
Space mean speed in ramp influence area,	S = 57.9	mph
	R	
Space mean speed in outer lanes,	S = 64.8	mph
	0	
Space mean speed for all vehicles,	S = 61.3	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7631	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	800	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7631	800		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2030	213		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8118	851	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.111 Using Equation 4

FM

v = v (P ) = 905 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8969	9600	No
FO			
v or v	3606 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3247	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4098	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 33.3$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.514	
	S	
Space mean speed in ramp influence area,	S = 55.6	mph
	R	
Space mean speed in outer lanes,	S = 62.7	mph
	0	
Space mean speed for all vehicles,	S = 59.2	mph

-----



Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7534	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	986	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7534	986		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2004	262		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8015	1049	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.087 Using Equation 4

FM

v = v (P ) = 695 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9064	9600	No
FO			
v or v	3660 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3206	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4255	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 34.5 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.554	
	S	
Space mean speed in ramp influence area,	S = 54.5	mph
	R	
Space mean speed in outer lanes,	S = 62.8	mph
	0	
Space mean speed for all vehicles,	S = 58.6	mph

-----

Phone: Fax:  
E-mail:

-----Merge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: State Route 60 Eastbound  
Junction: Euclid Ave EB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6301	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	800	vph	
Length of first accel/decel lane	560	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6301	800		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1676	213		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6703	851	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.111 Using Equation 4

FM

v = v (P ) = 747 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7554	9600	No
FO			
v or v	2978 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2681	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3532	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 29.1$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.415	
	S	
Space mean speed in ramp influence area,	S = 58.4	mph
	R	
Space mean speed in outer lanes,	S = 64.6	mph
	0	
Space mean speed for all vehicles,	S = 61.5	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Euclid Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6388	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1006	vph
Length of first accel/decel lane	560	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6388	1006		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1699	268		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6796	1070	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.084 Using Equation 4

FM

v = v (P ) = 571 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7866	9600	No
FO			
v or v	3112 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2718	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3788	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 31.0 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.454	
	S	
Space mean speed in ramp influence area,	S = 57.3	mph
	R	
Space mean speed in outer lanes,	S = 64.5	mph
	0	
Space mean speed for all vehicles,	S = 60.8	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Euclid Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7621	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	843	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7621	843		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2027	224		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8107	897	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.106 Using Equation 4

FM

v = v (P ) = 857 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9004	9600	No
FO			
v or v	3625 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3242	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4139	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 33.6 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.524	
	S	
Space mean speed in ramp influence area,	S = 55.3	mph
	R	
Space mean speed in outer lanes,	S = 62.7	mph
	0	
Space mean speed for all vehicles,	S = 59.1	mph

-----



Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak Hour  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Euclid Ave WB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	7670	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1087	vph
Length of first accel/decel lane	595	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7670	1087		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2040	289		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8160	1156	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.073 Using Equation 4

FM

v = v (P ) = 598 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9316	9600	No
FO			
v or v	3781 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3264	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4420	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 35.7 pc/mi/ln

R R 12 A E

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	M = 0.603	
	S	
Space mean speed in ramp influence area,	S = 53.1	mph
	R	
Space mean speed in outer lanes,	S = 62.6	mph
	0	
Space mean speed for all vehicles,	S = 57.7	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Merge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6219	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	531	vph	
Length of first accel/decel lane	700	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6219	531		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1654	141		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6616	565	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.147 Using Equation 4

FM

v = v (P ) = 974 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7181	9600	No
FO			
v or v	2821 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2646	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3211	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 25.9 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.369	
	S	
Space mean speed in ramp influence area,	S = 59.7	mph
	R	
Space mean speed in outer lanes,	S = 64.7	mph
	0	
Space mean speed for all vehicles,	S = 62.3	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6493	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	674	vph	
Length of first accel/decel lane	700	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6493	674		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1727	179		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6907	717	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.128 Using Equation 4

FM

v = v (P ) = 885 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7624	9600	No
FO			
v or v	3011 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2762	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3479	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.9 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.398	
	S	
Space mean speed in ramp influence area,	S = 58.8	mph
	R	
Space mean speed in outer lanes,	S = 64.3	mph
	0	
Space mean speed for all vehicles,	S = 61.7	mph

-----

Phone: Fax:  
 E-mail:

-----Merge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8032	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	737	vph	
Length of first accel/decel lane	510	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8032	737		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2136	196		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8545	784	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.120 Using Equation 4

FM

v = v (P ) = 1024 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9329	9600	No
FO			
v or v	3760 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3418	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4202	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 34.7 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.546	
	S	
Space mean speed in ramp influence area,	S = 54.7	mph
	R	
Space mean speed in outer lanes,	S = 61.9	mph
	0	
Space mean speed for all vehicles,	S = 58.4	mph

-----



Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7681	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	892	vph	
Length of first accel/decel lane	510	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7681	892		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2043	237		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8171	949	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.099 Using Equation 4

FM

v = v (P ) = 810 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9120	9600	No
FO			
v or v	3680 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3268	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4217	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 34.7$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.550	
	S	
Space mean speed in ramp influence area,	S = 54.6	mph
	R	
Space mean speed in outer lanes,	S = 62.6	mph
	0	
Space mean speed for all vehicles,	S = 58.6	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4621	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	2		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1667	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane	1500	ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4621	1667		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1229	443		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4916	1773	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.555 Using Equation 0

FM

v = v (P ) = 2728 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6689	7200	No
FO			
v or v	2188 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2809	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4582	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 12.2 pc/mi/ln

R R 12 A B

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.387	
	S	
Space mean speed in ramp influence area,	S = 59.2	mph
	R	
Space mean speed in outer lanes,	S = 64.2	mph
	0	
Space mean speed for all vehicles,	S = 60.7	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5237	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	2	
Free-flow speed on ramp	35.0	mph
Volume on ramp	2032	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	1500	ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5237	2032		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1393	540		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5571	2162	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.555 Using Equation 0

FM

v = v (P ) = 3092 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7733	7200	Yes
FO			
v or v	2479 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3183	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	5345	4600	Yes
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 18.0 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	M = 0.823	
	S	
Space mean speed in ramp influence area,	S = 46.9	mph
	R	
Space mean speed in outer lanes,	S = 62.9	mph
	0	
Space mean speed for all vehicles,	S = 50.9	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7654	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	473	vph	
Length of first accel/decel lane	810	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7654	473		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2036	126		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8143	503	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.155 Using Equation 4

FM

v = v (P ) = 1262 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8646	9600	No
FO			
v or v	3440 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3257	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3760	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 29.5 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.432	
	S	
Space mean speed in ramp influence area,	S = 57.9	mph
	R	
Space mean speed in outer lanes,	S = 62.6	mph
	0	
Space mean speed for all vehicles,	S = 60.5	mph

-----



Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5458	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	715	vph	
Length of first accel/decel lane	810	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5458	715		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1452	190		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5806	761	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.123 Using Equation 4

FM

v = v (P ) = 712 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6567	9600	No
FO			
v or v	2547 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2322	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3083	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 24.1 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.349	
	S	
Space mean speed in ramp influence area,	S = 60.2	mph
	R	
Space mean speed in outer lanes,	S = 65.5	mph
	0	
Space mean speed for all vehicles,	S = 62.9	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: Interstate 15 Northbound  
Junction: Limonite Ave NB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4380	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1346	vph
Length of first accel/decel lane	640	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4380	1346		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1165	358		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4660	1432	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.595 Using Equation 1

FM

v = v (P ) = 2775 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6092	7200	No
FO			
v or v	1885 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2775	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4207	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 33.6 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.538	
	S	
Space mean speed in ramp influence area,	S = 54.9	mph
	R	
Space mean speed in outer lanes,	S = 65.0	mph
	0	
Space mean speed for all vehicles,	S = 57.7	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4943	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1482	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4943	1482		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1315	394		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5259	1577	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.595 Using Equation 1

FM

v = v (P ) = 3131 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6836	7200	No
FO			
v or v	2128 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3131	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4708	4600	Yes
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 37.5 pc/mi/ln

R R 12 A E

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	M = 0.708	
	S	
Space mean speed in ramp influence area,	S = 50.2	mph
	R	
Space mean speed in outer lanes,	S = 64.1	mph
	0	
Space mean speed for all vehicles,	S = 53.8	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4801	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1422	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4801	1422		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1277	378		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5107	1513	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.594 Using Equation 1

FM

v = v (P ) = 3034 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6620	7200	No
FO			
v or v	2073 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3034	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4547	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 36.5 pc/mi/ln

R R 12 A E

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	M = 0.647	
	S	
Space mean speed in ramp influence area,	S = 51.9	mph
	R	
Space mean speed in outer lanes,	S = 64.3	mph
	0	
Space mean speed for all vehicles,	S = 55.2	mph

-----



Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5143	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1874	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5143	1874		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1368	498		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5471	1994	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.594 Using Equation 1

FM

v = v (P ) = 3251 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7465	7200	Yes
FO			
v or v	2220 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3251	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	5245	4600	Yes
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 41.7 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	M = 1.019	
	S	
Space mean speed in ramp influence area,	S = 41.5	mph
	R	
Space mean speed in outer lanes,	S = 63.8	mph
	0	
Space mean speed for all vehicles,	S = 46.3	mph

-----

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6779	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	811	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6779	811		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1803	216		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7212	863	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3631$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7212	9600	No
$v_{FO} = v_F - v_R$	6349	9600	No
$v_R$	863	2000	No
$v_3$ or $v_{av34}$	1790 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3631$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3631	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 31.3$  pc/mi/ln  
 R 12 D

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.506	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.8	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.7	mph
Space mean speed for all vehicles,	S = 63.5	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: State Route 60 Eastbound  
Junction: Archibald Ave EB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7196	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	769	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7196	769		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1914	205		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7655	818	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3799$  pc/h  
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7655	9600	No
$v_{FO} = v_F - v_R$	6837	9600	No
$v_R$	818	2000	No
$v_3$ or $v_{av34}$	1928 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3799$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3799	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 32.7$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.502	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.0	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.2	mph
Space mean speed for all vehicles,	S = 63.5	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	5		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8354	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	973	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8354	973		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2222	259		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8887	1035	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3684$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	7110	9600	No
$v_{FO} = v_F - v_R$	6075	9600	No
$v_R$	1035	2000	No
$v_3$ or $v_{av34}$	1713 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3684$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3684	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 22.4$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	D = 0.521	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 74.0	mph
Space mean speed for all vehicles,	S = 63.0	mph

-----



Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Archibald Ave WB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	5		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7989	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	705	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7989	705		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2125	188		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8499	750	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3388$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6800	9600	No
$v_{FO} = v_F - v_R$	6050	9600	No
$v_R$	750	2000	No
$v_3$ or $v_{av34}$	1706 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3388$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3388	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 19.9$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	D = 0.495	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 74.0	mph
Space mean speed for all vehicles,	S = 63.9	mph

-----

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Euclid Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7294	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	1026	vph	
Length of first accel/decel lane	560	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7294	1026		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1940	273		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7760	1091	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3999$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7760	9600	No
$v_{FO} = v_F - v_R$	6669	9600	No
$v_R$	1091	2000	No
$v_3$ or $v_{av34}$	1880 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3999$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3999	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 33.6$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.526	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.4	mph
Space mean speed for all vehicles,	S = 62.8	mph

-----

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Euclid Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7125	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	709	vph	
Length of first accel/decel lane	560	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7125	709		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1895	189		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7580	754	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 3730 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7580	9600	No
$v_{FO} = v_F - v_R$	6826	9600	No
$v_R$	754	2000	No
$v_3 \text{ or } v_{av34}$	1925 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3730$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3730	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 31.3 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.496	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.2	mph
Space mean speed for all vehicles,	S = 63.7	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: State Route 60 Wstbound  
Junction: Euclid Ave WB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8769	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	1120	vph	
Length of first accel/decel lane	485	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8769	1120		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2332	298		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2	

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	9329	1191	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4739$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	9329	9600	No
$v_{FO} = v_F - v_R$	8138	9600	No
$v_R$	1191	2000	No
$v_3$ or $v_{av34}$	2295 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4739$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4739	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 40.6$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.535	
Space mean speed in ramp influence area,	S = 55.0	mph
Space mean speed in outer lanes,	S = 71.7	mph
Space mean speed for all vehicles,	S = 62.1	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Wstbound  
 Junction: Euclid Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8573	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	823	vph	
Length of first accel/decel lane	485	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8573	823		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2280	219		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	9120	876	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4470$  pc/h  
 FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	9120	9600	No
$v_{FO} = v_F - v_R$	8244	9600	No
$v_R$	876	2000	No
$v_3$ or $v_{av34}$	2325 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4470$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4470	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 38.3$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.507	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.8	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.6	mph
Space mean speed for all vehicles,	S = 62.9	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7101	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	930	vph	
Length of first accel/decel lane	480	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7101	930		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1889	247		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7554	989	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3851 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	7554	9600	No
$v_{Fi} = v_F - v_R$	6565	9600	No
$v_R$	989	2000	No
$v_3 \text{ or } v_{av34}$	1851 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3851$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3851	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 33.1 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.517	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.5	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.5	mph
Space mean speed for all vehicles,	S = 63.1	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	7394	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	636	vph
Length of first accel/decel lane	480	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7394	636		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1966	169		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7866	677	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3811$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7866	9600	No
$v_{FO} = v_F - v_R$	7189	9600	No
$v_R$	677	2000	No
$v_3$ or $v_{av34}$	2027 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3811$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3811	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 32.7$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.489	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.8	mph
Space mean speed for all vehicles,	S = 63.7	mph

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Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8451	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	637	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8451	637		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2248	169		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8990	678	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4302$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	8990	9600	No
$v_{Fi} = v_F - v_R$	8312	9600	No
$v_R$	678	2000	No
$v_3$ or $v_{av34}$	2344 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4302$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4302	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 37.1$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.489	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.5	mph
Space mean speed for all vehicles,	S = 63.3	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Grove Ave WB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8277	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	517	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8277	517		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2201	138		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2	

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8805	550	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4149$  pc/h  
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8805	9600	No
$v_{FO} = v_F - v_R$	8255	9600	No
$v_R$	550	2000	No
$v_3$ or $v_{av34}$	2328 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4149$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4149	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 35.7$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.478	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.6	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.6	mph
Space mean speed for all vehicles,	S = 63.7	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5726	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	655	vph	
Length of first accel/decel lane	400	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5726	655		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1523	174		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6091	697	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.576 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3802$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	6091	7200	No
$v_{FO} = v_F - v_R$	5394	7200	No
$v_R$	697	2000	No
$v_3$ or $v_{av34}$	2289 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3802$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3802	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 33.3$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.491	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.8	mph
Space mean speed for all vehicles,	S = 61.2	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: Interstate 15 Northbound  
Junction: Cantu-Galleano Ave NB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6425	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	743	vph	
Length of first accel/decel lane	400	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6425	743		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1709	198		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2	

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6835	790	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.553 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 4132 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	6835	7200	No
$v_{FO} = v_F - v_R$	6045	7200	No
$v_R$	790	2000	No
$v_3$ or $v_{av34}$	2703 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700 \text{ pc/h?}$		Yes	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4135$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12A}$	4135	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 36.2 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.499	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.0	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 60.9	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak  
Freeway/Dir of Travel: Interstate 15 Southbound  
Junction: Cantu-Galleano Ave SB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	9203	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	2141	vph	
Length of first accel/decel lane	780	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	9203	2141		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2448	569		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2	

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	9790	2278	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.410 Using Equation 5  
FD  
 $v_{12} = v_R + (v_F - v_R) P = 5361 \text{ pc/h}$   
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	9790	7200	Yes
$v_{FO} = v_F - v_R$	7512	7200	Yes
$v_R$	2278	2000	Yes
$v_3 \text{ or } v_{av34}$	4429 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		Yes	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		Yes	
If yes, $v_{12A} = 7090$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12A}$	7090	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 58.2 \text{ pc/mi/ln}$   
Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.633	
Space mean speed in ramp influence area,	S <sub>R</sub> = 52.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 56.2	mph

-----



Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: Interstate 15 Southbound  
Junction: Cantu-Galleano Ave SB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6875	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	1927	vph	
Length of first accel/decel lane	780	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6875	1927		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1828	513		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7314	2050	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.483 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 4592$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	7314	7200	Yes
$v_{FO} = v_F - v_R$	5264	7200	No
$v_R$	2050	2000	Yes
$v_3$ or $v_{av34}$	2722 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		Yes	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4614$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12A}$	4614	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 36.9$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.613	
Space mean speed in ramp influence area,	S <sub>R</sub> = 52.8	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 58.1	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak  
Freeway/Dir of Travel: Interstate 15 Northbound  
Junction: Limonite Ave NB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6546	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	1554	vph	
Length of first accel/decel lane	405	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6546	1554		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1741	413		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2	

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6964	1653	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.510 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 4361$  pc/h  
 FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	6964	7200	No
$v_{FO} = v_F - v_R$	5311	7200	No
$v_R$	1653	2000	No
$v_3$ or $v_{av34}$	2603 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4361$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4361	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 38.1$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.577	
Space mean speed in ramp influence area,	S <sub>R</sub> = 53.9	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.5	mph
Space mean speed for all vehicles,	S = 59.1	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: Interstate 15 Northbound  
Junction: Limonite Ave NB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6174	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	1478	vph	
Length of first accel/decel lane	405	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6174	1478		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1642	393		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2	

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6568	1572	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.523 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 4187$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	6568	7200	No
$v_{FO} = v_F - v_R$	4996	7200	No
$v_R$	1572	2000	No
$v_3$ or $v_{av34}$	2381 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4187$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4187	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 36.6$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.569	
Space mean speed in ramp influence area,	S <sub>R</sub> = 54.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.4	mph
Space mean speed for all vehicles,	S = 59.3	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

----- Diverge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Baseline 2023 with Project  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8127	vph	

----- Off Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	2946	vph	
Length of first accel/decel lane	420	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8127	2946		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2161	784		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8646	3134	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.400 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 5337$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{Fi}$	8646	7200	Yes
$v_{FO} = v_F - v_R$	5512	7200	No
$v_R$	3134	2000	Yes
$v_3$ or $v_{av34}$	3309 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		Yes	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 5946$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12A}$	5946	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 51.6$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.710	
Space mean speed in ramp influence area,	S <sub>R</sub> = 50.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 55.0	mph

-----



Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: Interstate 15 Southbound  
Junction: Limonite Ave SB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Baseline 2023 with Project  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6173	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1128	vph
Length of first accel/decel lane	420	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6173	1128		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1642	300		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2	

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6567	1200	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.541 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 4102$  pc/h  
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6567	7200	No
$v_{FO} = v_F - v_R$	5367	7200	No
$v_R$	1200	2000	No
$v_3$ or $v_{av34}$	2465 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4102$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4102	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 35.7$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.536	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.0	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.1	mph
Space mean speed for all vehicles,	S = 60.1	mph

-----

**HORIZON YEAR 2040 PLUS PROJECT AM/PM PEAK HOUR**

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: State Route 60 Eastbound  
Junction: Archibald Ave EB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6249	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	641	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6249	641		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1662	170		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6648	682	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.133 Using Equation 4

FM

v = v (P ) = 881 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7330	9600	No
FO			
v or v	2883 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2659	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3341	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.2 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.386	
	S	
Space mean speed in ramp influence area,	S = 59.2	mph
	R	
Space mean speed in outer lanes,	S = 64.6	mph
	0	
Space mean speed for all vehicles,	S = 62.0	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6566	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1072	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6566	1072		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1746	285		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6985	1140	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.075 Using Equation 4

FM

v = v (P ) = 526 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8125	9600	No
FO			
v or v	3229 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2794	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3934	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 31.6 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.476	
	S	
Space mean speed in ramp influence area,	S = 56.7	mph
	R	
Space mean speed in outer lanes,	S = 64.3	mph
	0	
Space mean speed for all vehicles,	S = 60.4	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7908	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	829	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7908	829		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2103	220		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8413	882	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.108 Using Equation 4

FM

v = v (P ) = 905 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9295	9600	No
FO			
v or v	3754 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3365	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4247	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 34.5$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.552	
	S	
Space mean speed in ramp influence area,	S = 54.5	mph
	R	
Space mean speed in outer lanes,	S = 62.1	mph
	0	
Space mean speed for all vehicles,	S = 58.4	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	7908	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	829	vph
Length of first accel/decel lane	595	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7908	829		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2103	220		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8413	882	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.108 Using Equation 4

FM

v = v (P ) = 905 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9295	9600	No
FO			
v or v	3754 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3365	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4247	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 34.5 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.552	
	S	
Space mean speed in ramp influence area,	S = 54.5	mph
	R	
Space mean speed in outer lanes,	S = 62.1	mph
	0	
Space mean speed for all vehicles,	S = 58.4	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Euclid Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6620	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	801	vph
Length of first accel/decel lane	560	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6620	801		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1761	213		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7043	852	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.111 Using Equation 4

FM

v = v (P ) = 784 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7895	9600	No
FO			
v or v	3129 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2817	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3669	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 30.2$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.435	
	S	
Space mean speed in ramp influence area,	S = 57.8	mph
	R	
Space mean speed in outer lanes,	S = 64.2	mph
	0	
Space mean speed for all vehicles,	S = 61.1	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak Hour  
Freeway/Dir of Travel: State Route 60 Eastbound  
Junction: Euclid Ave EB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6925	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1004	vph
Length of first accel/decel lane	560	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6925	1004		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1842	267		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7367	1068	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.084 Using Equation 4

FM

v = v (P ) = 621 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8435	9600	No
FO			
v or v	3373 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2946	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4014	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 32.8 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.498	
	S	
Space mean speed in ramp influence area,	S = 56.1	mph
	R	
Space mean speed in outer lanes,	S = 63.8	mph
	0	
Space mean speed for all vehicles,	S = 59.9	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Euclid Ave WB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7931	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	842	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7931	842		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2109	224		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8437	896	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.106 Using Equation 4

FM

v = v (P ) = 893 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9333	9600	No
FO			
v or v	3772 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3374	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4270	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{12} - 0.00627 \frac{L}{A} = 34.6$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.558	
	S	
Space mean speed in ramp influence area,	S = 54.4	mph
	R	
Space mean speed in outer lanes,	S = 62.1	mph
	0	
Space mean speed for all vehicles,	S = 58.3	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak Hour  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Euclid Ave WB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8226	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1084	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8226	1084		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2188	288		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8751	1153	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.074 Using Equation 4

FM

v = v (P ) = 645 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9904	9600	Yes
FO			
v or v	4053 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3500	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4653	4600	Yes
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 37.5 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	M = 0.688	
	S	
Space mean speed in ramp influence area,	S = 50.7	mph
	R	
Space mean speed in outer lanes,	S = 61.5	mph
	0	
Space mean speed for all vehicles,	S = 55.9	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6545	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	530	vph	
Length of first accel/decel lane	700	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6545	530		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1741	141		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6963	564	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.147 Using Equation 4

FM

v = v (P ) = 1026 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7527	9600	No
FO			
v or v	2968 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2785	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3349	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 26.9 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.383	
	S	
Space mean speed in ramp influence area,	S = 59.3	mph
	R	
Space mean speed in outer lanes,	S = 64.3	mph
	0	
Space mean speed for all vehicles,	S = 62.0	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7028	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	671	vph	
Length of first accel/decel lane	700	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7028	671		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1869	178		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7477	714	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.129 Using Equation 4

FM

v = v (P ) = 961 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8191	9600	No
FO			
v or v	3258 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2990	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3704	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 29.6 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.430	
	S	
Space mean speed in ramp influence area,	S = 57.9	mph
	R	
Space mean speed in outer lanes,	S = 63.7	mph
	0	
Space mean speed for all vehicles,	S = 61.0	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Grove Ave WB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8342	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	735	vph	
Length of first accel/decel lane	510	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8342	735		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2219	195		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8874	782	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.120 Using Equation 4

FM

v = v (P ) = 1065 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9656	9600	Yes
FO			
v or v	3904 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3549	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4331	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 35.7 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	M = 0.582	
	S	
Space mean speed in ramp influence area,	S = 53.7	mph
	R	
Space mean speed in outer lanes,	S = 61.3	mph
	0	
Space mean speed for all vehicles,	S = 57.6	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8239	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	889	vph	
Length of first accel/decel lane	510	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8239	889		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2191	236		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8765	946	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.100 Using Equation 4

FM

v = v (P ) = 873 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9711	9600	Yes
FO			
v or v	3946 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3506	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4452	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 36.6 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	M = 0.620	
	S	
Space mean speed in ramp influence area,	S = 52.6	mph
	R	
Space mean speed in outer lanes,	S = 61.5	mph
	0	
Space mean speed for all vehicles,	S = 57.1	mph

-----

Phone: Fax:  
 E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4867	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	2		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1655	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane	1500	ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4867	1655		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1294	440		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5178	1761	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.555 Using Equation 0

FM

v = v (P ) = 2874 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6939	7200	No
FO			
v or v	2304 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2958	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4719	4600	Yes
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 13.3 pc/mi/ln

R R 12 A B

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.443	
	S	
Space mean speed in ramp influence area,	S = 57.6	mph
	R	
Space mean speed in outer lanes,	S = 63.8	mph
	0	
Space mean speed for all vehicles,	S = 59.4	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Cantu-Galleano NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5809	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	2	
Free-flow speed on ramp	35.0	mph
Volume on ramp	2001	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	1500	ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5809	2001		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1545	532		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6180	2129	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.555 Using Equation 0

FM

v = v (P ) = 3430 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8309	7200	Yes
FO			
v or v	2750 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3531	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	5660	4600	Yes
12A			

----- Level of Service Determination (if not F) -----

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 20.4$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	M = 1.126	
	S	
Space mean speed in ramp influence area,	S = 38.5	mph
	R	
Space mean speed in outer lanes,	S = 61.4	mph
	0	
Space mean speed for all vehicles,	S = 43.7	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8052	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	461	vph	
Length of first accel/decel lane	810	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8052	461		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2141	123		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8566	490	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.157 Using Equation 4

FM

v = v (P ) = 1341 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	9056	9600	No
FO			
v or v	3612 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3426	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3916	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 30.7 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.460	
	S	
Space mean speed in ramp influence area,	S = 57.1	mph
	R	
Space mean speed in outer lanes,	S = 61.8	mph
	0	
Space mean speed for all vehicles,	S = 59.7	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6405	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	684	vph	
Length of first accel/decel lane	810	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6405	684		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1703	182		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6814	728	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.127 Using Equation 4

FM

v = v (P ) = 864 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7542	9600	No
FO			
v or v	2975 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	Yes	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2725	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3453	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.0 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.388	
	S	
Space mean speed in ramp influence area,	S = 59.1	mph
	R	
Space mean speed in outer lanes,	S = 64.4	mph
	0	
Space mean speed for all vehicles,	S = 61.9	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	4346	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1592	vph	
Length of first accel/decel lane	640	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4346	1592		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1156	423		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	4623	1694	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.595 Using Equation 1

FM

v = v (P ) = 2753 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6317	7200	No
FO			
v or v	1870 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2753	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4447	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 35.4 pc/mi/ln

R R 12 A E

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	M = 0.609	
	S	
Space mean speed in ramp influence area,	S = 52.9	mph
	R	
Space mean speed in outer lanes,	S = 65.1	mph
	0	
Space mean speed for all vehicles,	S = 56.0	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak Hour  
Freeway/Dir of Travel: Interstate 15 Northbound  
Junction: Limonite Ave NB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4927	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	2054	vph
Length of first accel/decel lane	640	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4927	2054		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1310	546		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5241	2185	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.595 Using Equation 1

FM

v = v (P ) = 3121 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	7426	7200	Yes
FO			
v or v	2120 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3121	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	5306	4600	Yes
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 41.8 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	M = 1.062	
	S	
Space mean speed in ramp influence area,	S = 40.3	mph
	R	
Space mean speed in outer lanes,	S = 64.2	mph
	0	
Space mean speed for all vehicles,	S = 45.1	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak Hour  
Freeway/Dir of Travel: Interstate 15 Southbound  
Junction: Limonite Ave SB On-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4789	vph

----- On Ramp Data -----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1743	vph
Length of first accel/decel lane	595	ft
Length of second accel/decel lane		ft

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4789	1743		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1274	464		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5095	1854	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.594 Using Equation 1

FM

v = v (P ) = 3027 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	6949	7200	No
FO			
v or v	2068 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3027	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4881	4600	Yes
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 39.0 pc/mi/ln

R R 12 A E

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	M = 0.793	
	S	
Space mean speed in ramp influence area,	S = 47.8	mph
	R	
Space mean speed in outer lanes,	S = 64.4	mph
	0	
Space mean speed for all vehicles,	S = 51.8	mph

-----

Phone: Fax:  
E-mail:

----- Merge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak Hour  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB On-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5112	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	2589	vph	
Length of first accel/decel lane	595	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent Ramp		vph	
Position of adjacent Ramp			
Type of adjacent Ramp			
Distance to adjacent Ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5112	2589		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1360	689		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5438	2754	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 0.594 Using Equation 1

FM

v = v (P ) = 3231 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	8192	7200	Yes
FO			
v or v	2207 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 3231	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	5985	4600	Yes
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 47.2 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	M = 1.829	
	S	
Space mean speed in ramp influence area,	S = 18.8	mph
	R	
Space mean speed in outer lanes,	S = 63.9	mph
	0	
Space mean speed for all vehicles,	S = 23.2	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

----- Diverge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7104	vph	

----- Off Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	853	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7104	853		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1889	227		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7557	907	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3806$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7557	9600	No
$v_{FO} = v_F - v_R$	6650	9600	No
$v_R$	907	2000	No
$v_3$ or $v_{av34}$	1875 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3806$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3806	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 32.8$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.510	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.7	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.4	mph
Space mean speed for all vehicles,	S = 63.3	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Archibald Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	7728	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	786	vph
Length of first accel/decel lane	465	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7728	786		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2055	209		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8221	836	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.436 Using Equation 8  
FD  
 $v_{12} = v_R + (v_F - v_R) P = 4056$  pc/h  
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8221	9600	No
$v_{FO} = v_F - v_R$	7385	9600	No
$v_R$	836	2000	No
$v_3$ or $v_{av34}$	2082 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4056$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4056	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 34.9$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.503	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.9	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.6	mph
Space mean speed for all vehicles,	S = 63.3	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak  
Freeway/Dir of Travel: State Route 60 Westbound  
Junction: Archibald Ave WB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	5		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8592	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	934	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8592	934		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2285	248		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	9140	994	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3749$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{F1}$	7312	9600	No
$v_{12} = v_{F0} - v_{R3}$	6318	9600	No
$v_{12}$	994	2000	No
$v_{12}$ or $v_{3av34}$	1781 pc/h	(Equation 13-14 or 13-17)	
Is $v_{12}$ or $v_{3av34} > 2700$ pc/h?		No	
Is $v_{12}$ or $v_{3av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3749$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3749	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 23.0$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	D = 0.517	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.5	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.7	mph
Space mean speed for all vehicles,	S = 63.1	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Archibald Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	70.0	mph
Volume on freeway	8527	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	725	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8527	725		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2268	193		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	9071	771	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3599$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7257	9600	No
$v_{FO} = v_F - v_R$	6486	9600	No
$v_R$	771	2000	No
$v_3$ or $v_{av34}$	1829 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3599$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3599	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 21.7$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	D = 0.497	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.6	mph
Space mean speed for all vehicles,	S = 63.7	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak  
Freeway/Dir of Travel: State Route 60 Eastbound  
Junction: Euclid Ave EB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	7609	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1022	vph
Length of first accel/decel lane	560	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7609	1022		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2024	272		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8095	1087	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4142$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8095	9600	No
$v_{FO} = v_F - v_R$	7008	9600	No
$v_R$	1087	2000	No
$v_3$ or $v_{av34}$	1976 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4142$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4142	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 34.8$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.526	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.0	mph
Space mean speed for all vehicles,	S = 62.7	mph

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Euclid Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7661	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	708	vph	
Length of first accel/decel lane	560	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7661	708		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2038	188		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8150	753	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3978$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8150	9600	No
$v_{FO} = v_F - v_R$	7397	9600	No
$v_R$	753	2000	No
$v_3$ or $v_{av34}$	2086 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3978$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3978	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 33.4$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.496	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.6	mph
Space mean speed for all vehicles,	S = 63.5	mph

-----

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Wstbound  
 Junction: Euclid Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	9077	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	1118	vph	
Length of first accel/decel lane	485	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	9077	1118		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2414	297		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	9656	1189	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4881$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	9656	9600	Yes
$v_{FO} = v_F - v_R$	8467	9600	No
$v_R$	1189	2000	No
$v_3$ or $v_{av34}$	2387 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4881$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4881	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 41.9$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.535	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.0	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.4	mph
Space mean speed for all vehicles,	S = 62.1	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: State Route 60 Wstbound  
Junction: Euclid Ave WB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	9128	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	822	vph
Length of first accel/decel lane	485	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	9128	822		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2428	219		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	9711	874	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4727$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	9711	9600	Yes
$v_{FO} = v_F - v_R$	8837	9600	No
$v_R$	874	2000	No
$v_3$ or $v_{av34}$	2492 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4727$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4727	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 40.5$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.507	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.8	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.0	mph
Space mean speed for all vehicles,	S = 62.7	mph

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Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7421	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	924	vph	
Length of first accel/decel lane	480	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7421	924		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1974	246		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7895	983	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 3997 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7895	9600	No
$v_{FO} = v_F - v_R$	6912	9600	No
$v_R$	983	2000	No
$v_3 \text{ or } v_{av34}$	1949 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3997$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3997	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 34.3 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.516	
Space mean speed in ramp influence area,	S <sub>R</sub> = 55.5	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 73.1	mph
Space mean speed for all vehicles,	S = 63.0	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Eastbound  
 Junction: Grove Ave EB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	7929	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	636	vph
Length of first accel/decel lane	480	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7929	636		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2109	169		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8435	677	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4059$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	8435	9600	No
$v_{FO} = v_F - v_R$	7758	9600	No
$v_R$	677	2000	No
$v_3$ or $v_{av34}$	2188 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4059$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4059	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 34.8$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.489	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 72.2	mph
Space mean speed for all vehicles,	S = 63.6	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	4		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8757	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	633	vph	
Length of first accel/decel lane	465	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8757	633		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2329	168		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	9316	673	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4441$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	9316	9600	No
$v_{FO} = v_F - v_R$	8643	9600	No
$v_R$	673	2000	No
$v_3$ or $v_{av34}$	2437 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4441$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4441	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 38.3$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.489	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.2	mph
Space mean speed for all vehicles,	S = 63.2	mph

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Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: State Route 60 Westbound  
 Junction: Grove Ave WB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	8834	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	516	vph
Length of first accel/decel lane	465	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8834	516		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2349	137		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	9398	549	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.436 Using Equation 8

FD

$v_{12} = v_R + (v_F - v_R) P = 4407$  pc/h

12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	9398	9600	No
$v_{FO} = v_F - v_R$	8849	9600	No
$v_R$	549	2000	No
$v_3$ or $v_{av34}$	2495 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4407$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4407	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 38.0$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.477	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.6	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.0	mph
Space mean speed for all vehicles,	S = 63.4	mph

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Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: AM Peak  
Freeway/Dir of Travel: Interstate 15 Northbound  
Junction: Cantu-Galleano Ave NB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	5938	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	621	vph	
Length of first accel/decel lane	400	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5938	621		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1579	165		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6317	661	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.572 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 3894$  pc/h  
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	6317	7200	No
$v_{FO} = v_F - v_R$	5656	7200	No
$v_R$	661	2000	No
$v_3$ or $v_{av34}$	2423 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3894$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	3894	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 34.1$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.487	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 71.2	mph
Space mean speed for all vehicles,	S = 61.3	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: Interstate 15 Northbound  
Junction: Cantu-Galleano Ave NB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6981	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	727	vph	
Length of first accel/decel lane	400	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6981	727		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1857	193		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7427	773	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.539 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 4358$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	7427	7200	Yes
$v_{FO} = v_F - v_R$	6654	7200	No
$v_R$	773	2000	No
$v_3$ or $v_{av34}$	3069 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		Yes	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4727$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12A}$	4727	4400	No

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 41.3$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.498	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 60.5	mph

-----

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Cantu-Galleano Ave SB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	9567	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	2107	vph	
Length of first accel/decel lane	780	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	9567	2107		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2544	560		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	10178	2241	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.402 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 5435$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	10178	7200	Yes
$v_{FO} = v_F - v_R$	7937	7200	Yes
$v_R$	2241	2000	Yes
$v_3$ or $v_{av34}$	4743 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		Yes	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		Yes	
If yes, $v_{12A} = 7478$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12A}$	7478	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 61.5$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.630	
Space mean speed in ramp influence area,	S <sub>R</sub> = 52.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 56.1	mph

-----

Phone: Fax:  
E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
Agency/Co.: Stantec Consulting Services  
Date performed: 11/08/17  
Analysis time period: PM Peak  
Freeway/Dir of Travel: Interstate 15 Southbound  
Junction: Cantu-Galleano Ave SB Off-Ramp  
Jurisdiction: Caltrans District 8  
Analysis Year: Horizon Year 2040  
Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7806	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	1911	vph	
Length of first accel/decel lane	780	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7806	1911		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2076	508		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8304	2033	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.459 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 4911$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{Fi}$	8304	7200	Yes
$v_{FO} = v_F - v_R$	6271	7200	No
$v_R$	2033	2000	Yes
$v_3$ or $v_{av34}$	3393 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		Yes	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 5604$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12A}$	5604	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 45.4$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.611	
Space mean speed in ramp influence area,	S <sub>R</sub> = 52.9	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 57.5	mph

-----

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7024	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	2066	vph	
Length of first accel/decel lane	405	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7024	2066		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1868	549		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7472	2198	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.472 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 4688 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	7472	7200	Yes
$v_{FO} = v_F - v_R$	5274	7200	No
$v_R$	2198	2000	Yes
$v_3$ or $v_{av34}$	2784 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700 \text{ pc/h?}$		Yes	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4772$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12A}$	4772	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 41.6 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.626	
Space mean speed in ramp influence area,	S <sub>R</sub> = 52.5	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 57.7	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: Interstate 15 Northbound  
 Junction: Limonite Ave NB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	6878	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	2198	vph	
Length of first accel/decel lane	405	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6878	2198		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1829	585		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7317	2338	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.470 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 4676$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	7317	7200	Yes
$v_{FO} = v_F - v_R$	4979	7200	No
$v_R$	2338	2000	Yes
$v_3$ or $v_{av34}$	2641 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4676$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12}$	4676	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 40.8$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.638	
Space mean speed in ramp influence area,	S <sub>R</sub> = 52.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.4	mph
Space mean speed for all vehicles,	S = 57.5	mph

-----

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

----- Diverge Analysis -----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

----- Freeway Data -----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	8513	vph	

----- Off Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	3344	vph	
Length of first accel/decel lane	420	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8513	3344		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	2264	889		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		



Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	9056	3557	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.370 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 5592$  pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	9056	7200	Yes
$v_{FO} = v_F - v_R$	5499	7200	No
$v_R$	3557	2000	Yes
$v_3$ or $v_{av34}$	3464 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		Yes	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 6356$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12A}$	6356	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 55.1$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

Intermediate speed variable,	D = 0.748	
Space mean speed in ramp influence area,	S <sub>R</sub> = 49.1	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 53.9	mph

-----

Phone: Fax:  
 E-mail:

-----Diverge Analysis-----

Analyst: Kelly Tran  
 Agency/Co.: Stantec Consulting Services  
 Date performed: 11/08/17  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: Interstate 15 Southbound  
 Junction: Limonite Ave SB Off-Ramp  
 Jurisdiction: Caltrans District 8  
 Analysis Year: Horizon Year 2040  
 Description: WOCC Mainline Analysis

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.0	mph	
Volume on freeway	7089	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	2075	vph	
Length of first accel/decel lane	420	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7089	2075		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	1885	552		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7541	2207	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.470 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 4714$  pc/h  
 FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{Fi}$	7541	7200	Yes
$v_{FO} = v_F - v_R$	5334	7200	No
$v_R$	2207	2000	Yes
$v_3$ or $v_{av34}$	2827 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		Yes	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4841$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
$v_{12A}$	4841	4400	Yes

----- Level of Service Determination (if not F) -----

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 42.1$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence F

----- Speed Estimation -----

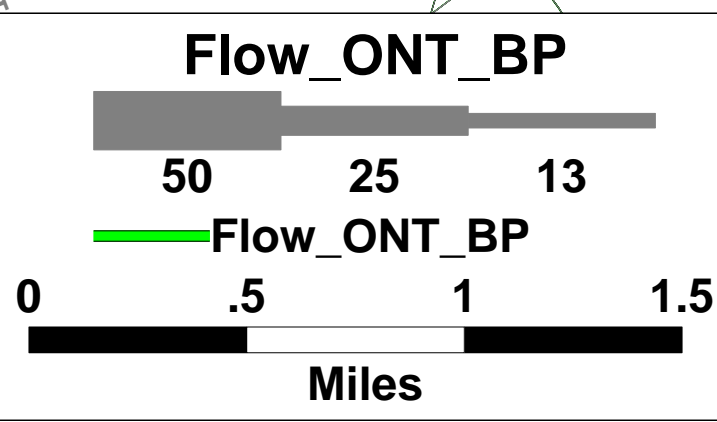
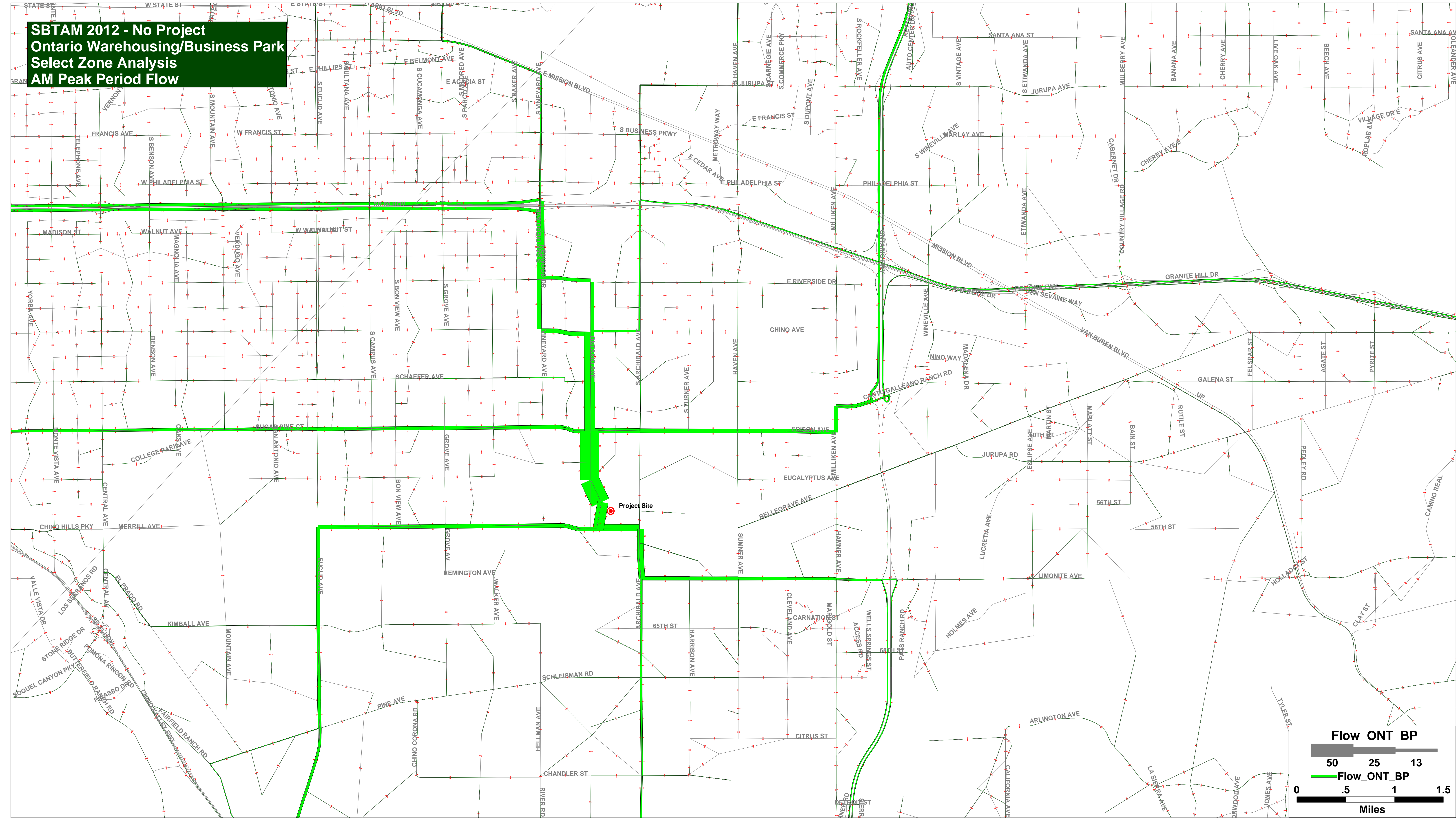
Intermediate speed variable,	D = 0.627	
Space mean speed in ramp influence area,	S <sub>R</sub> = 52.5	mph
Space mean speed in outer lanes,	S <sub>0</sub> = 70.2	mph
Space mean speed for all vehicles,	S = 57.7	mph

-----

## **APPENDIX E**

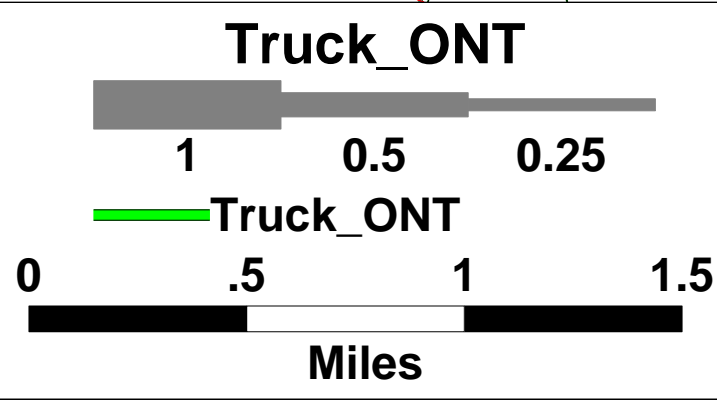
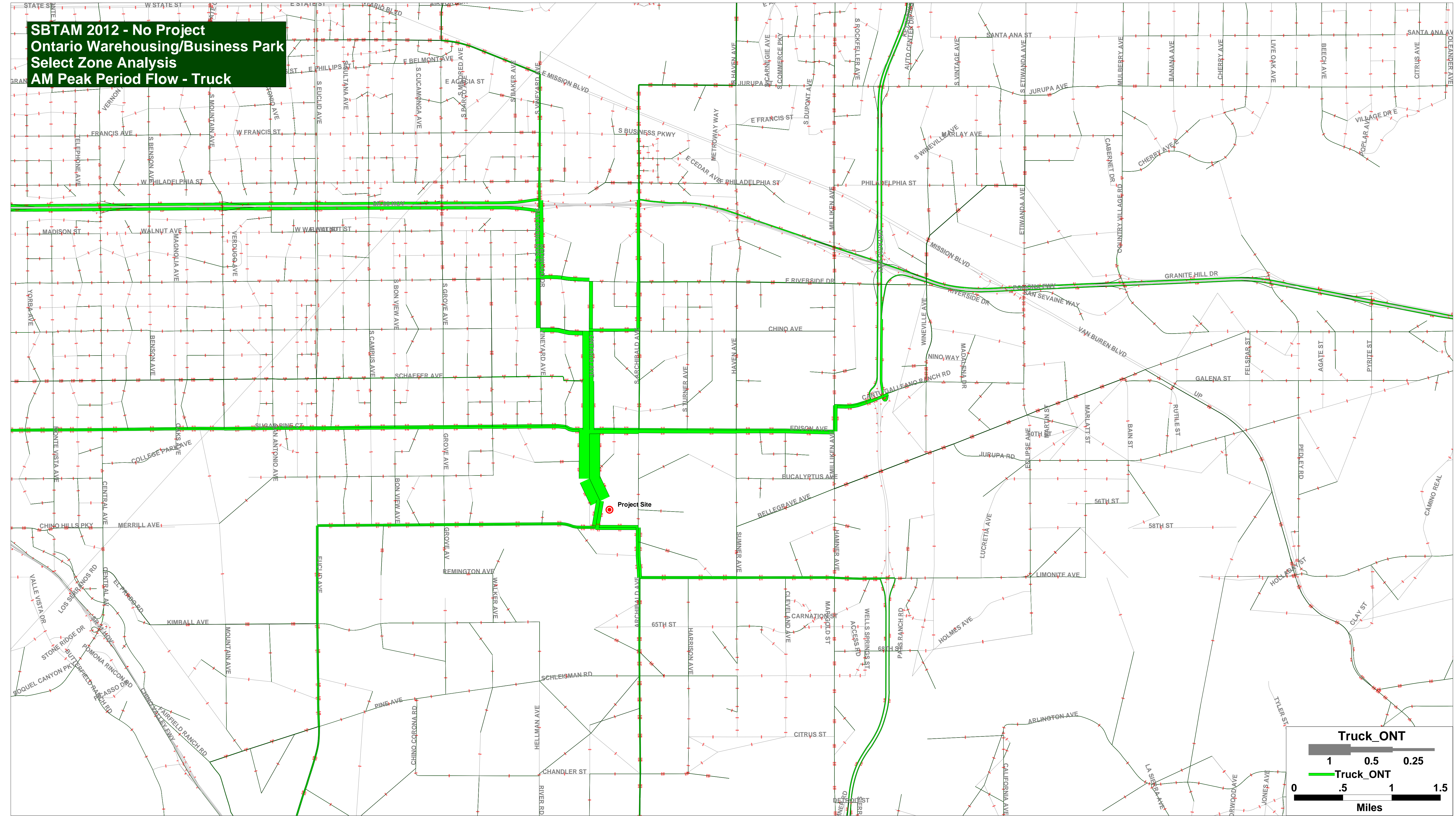
### **SAN BERNARDINO ASSOCIATION OF GOVERNMENTS (SANBAG) SBTAM Model Output**

**SBTAM 2012 - No Project  
Ontario Warehousing/Business Park  
Select Zone Analysis  
AM Peak Period Flow**



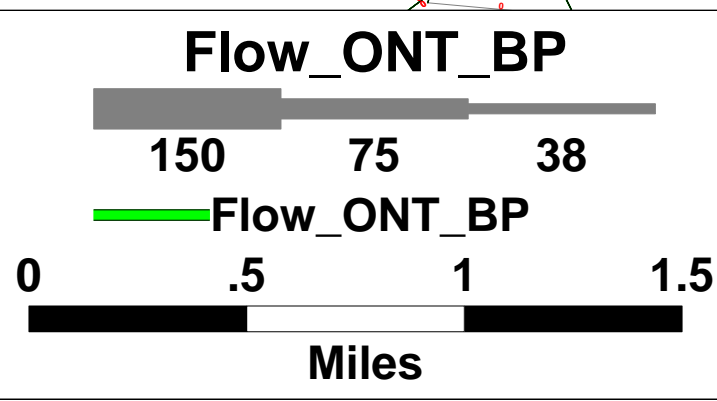
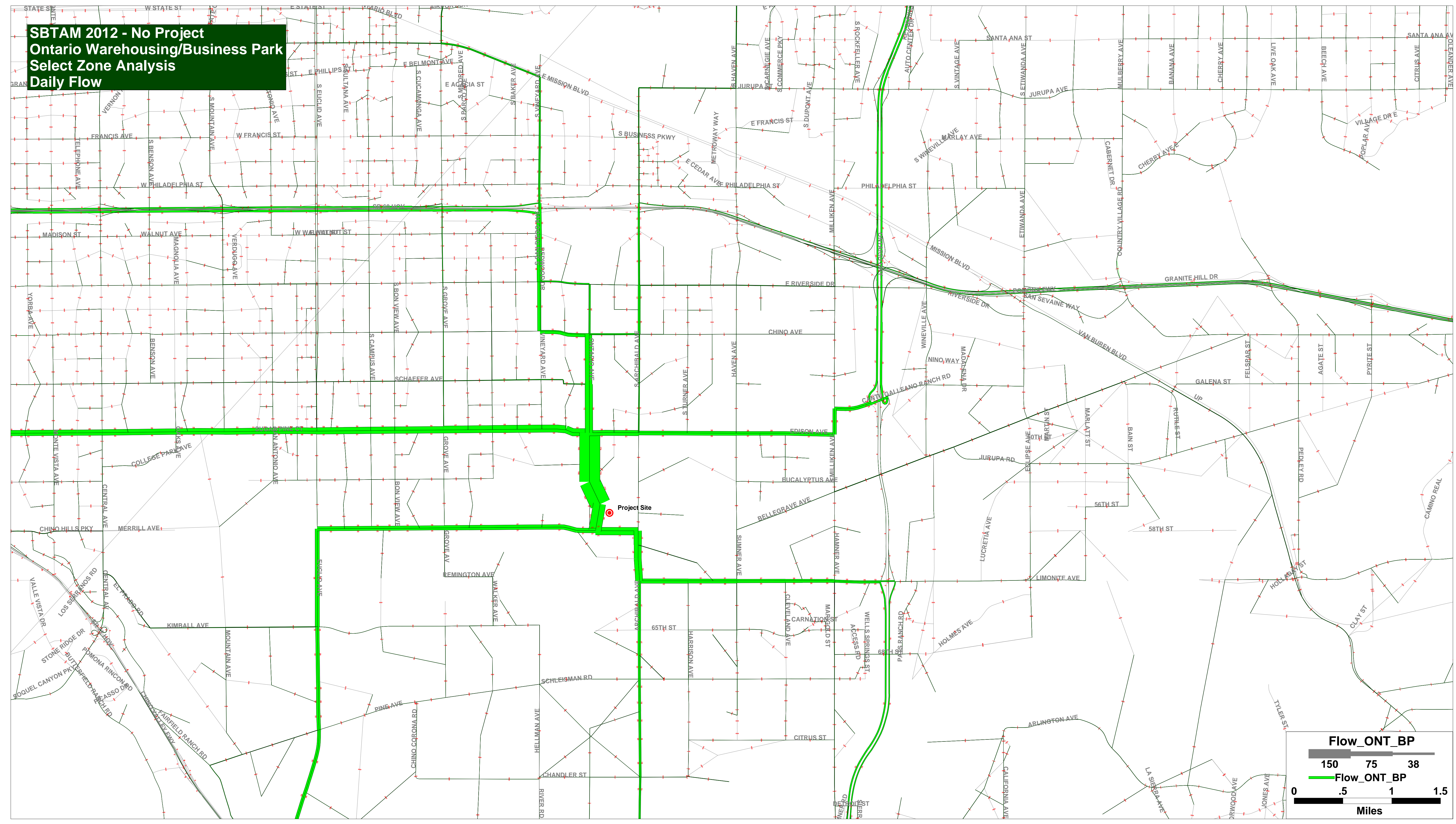


**SBTAM 2012 - No Project  
 Ontario Warehousing/Business Park  
 Select Zone Analysis  
 AM Peak Period Flow - Truck**



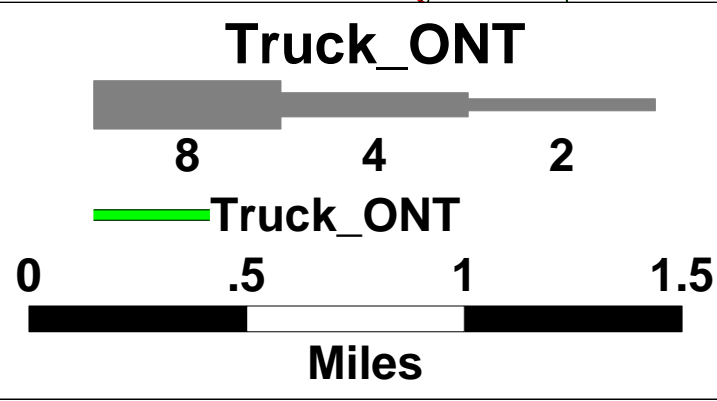
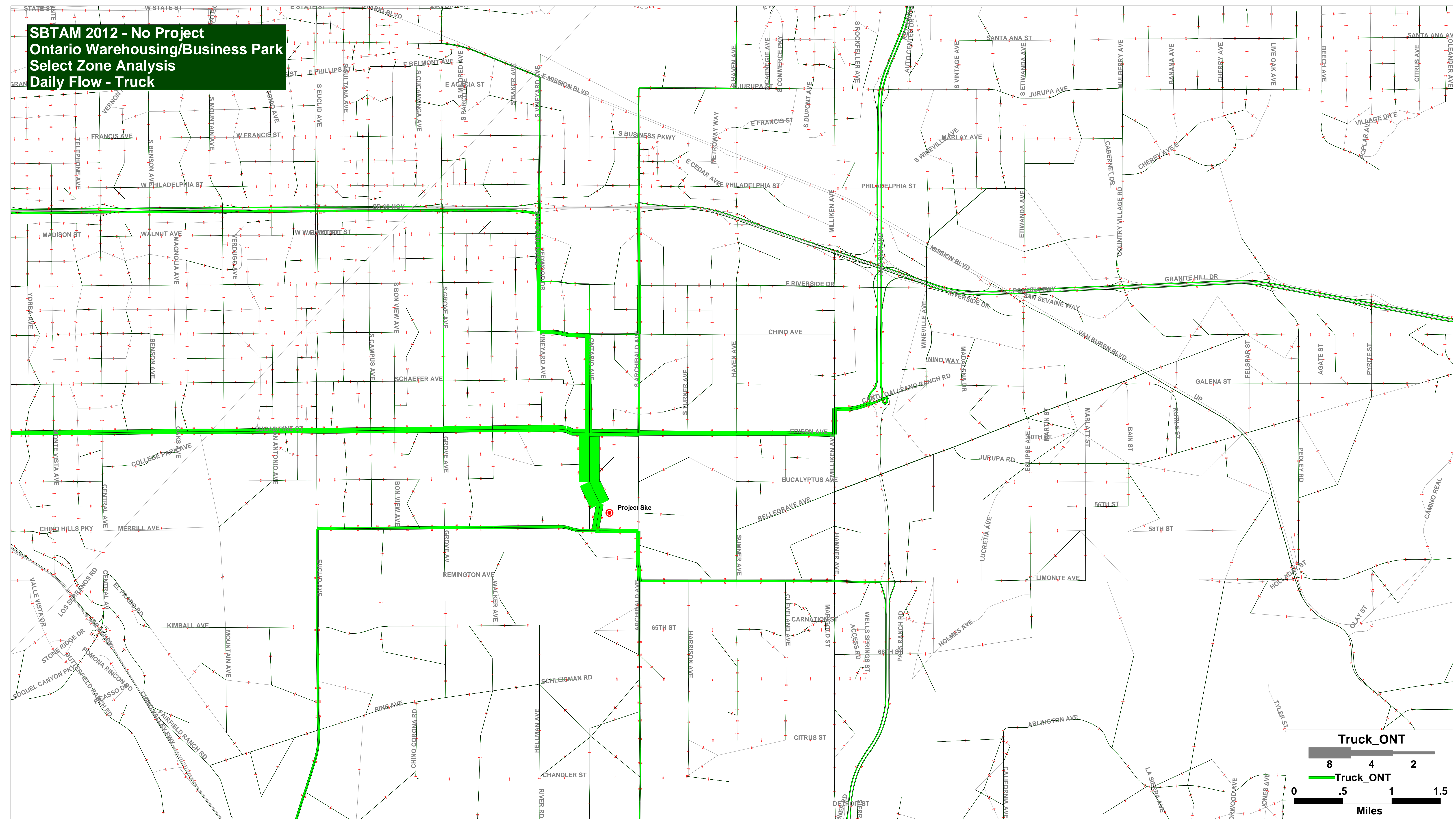


**SBTAM 2012 - No Project  
Ontario Warehousing/Business Park  
Select Zone Analysis  
Daily Flow**



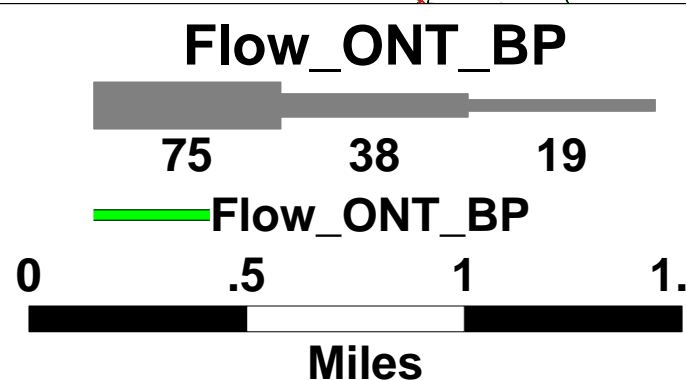
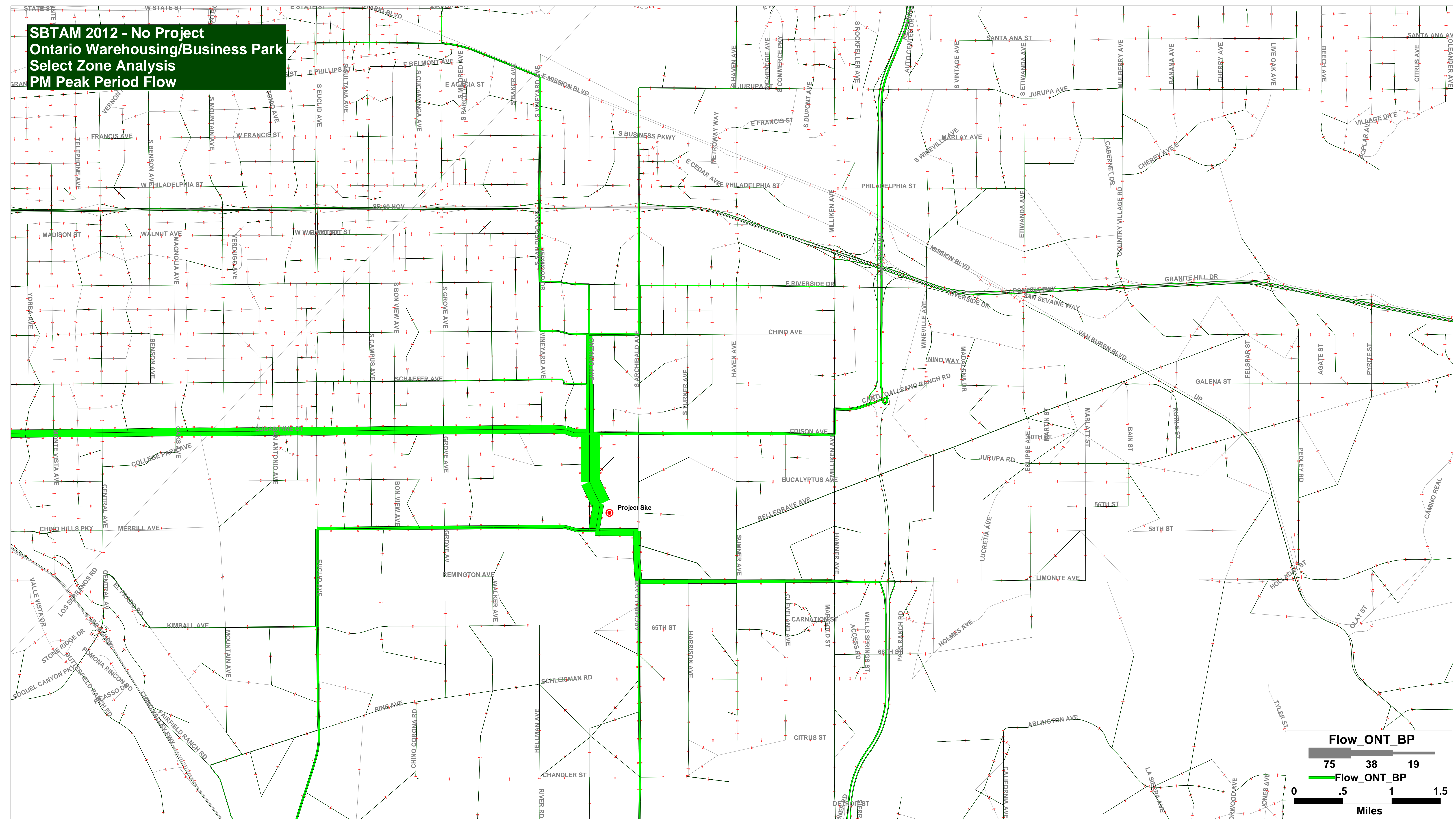


**SBTAM 2012 - No Project  
Ontario Warehousing/Business Park  
Select Zone Analysis  
Daily Flow - Truck**



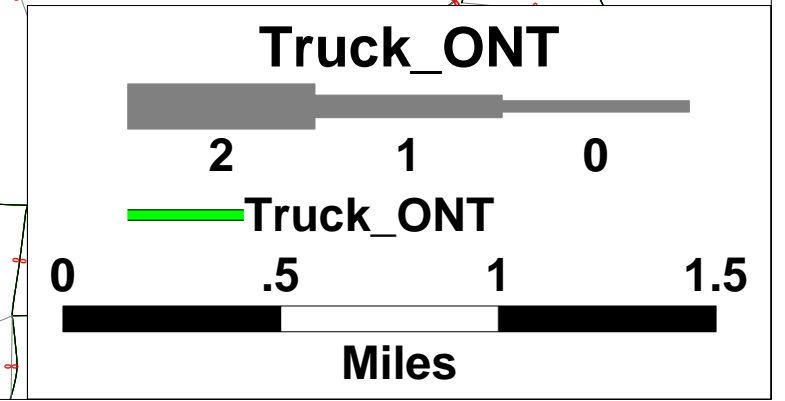
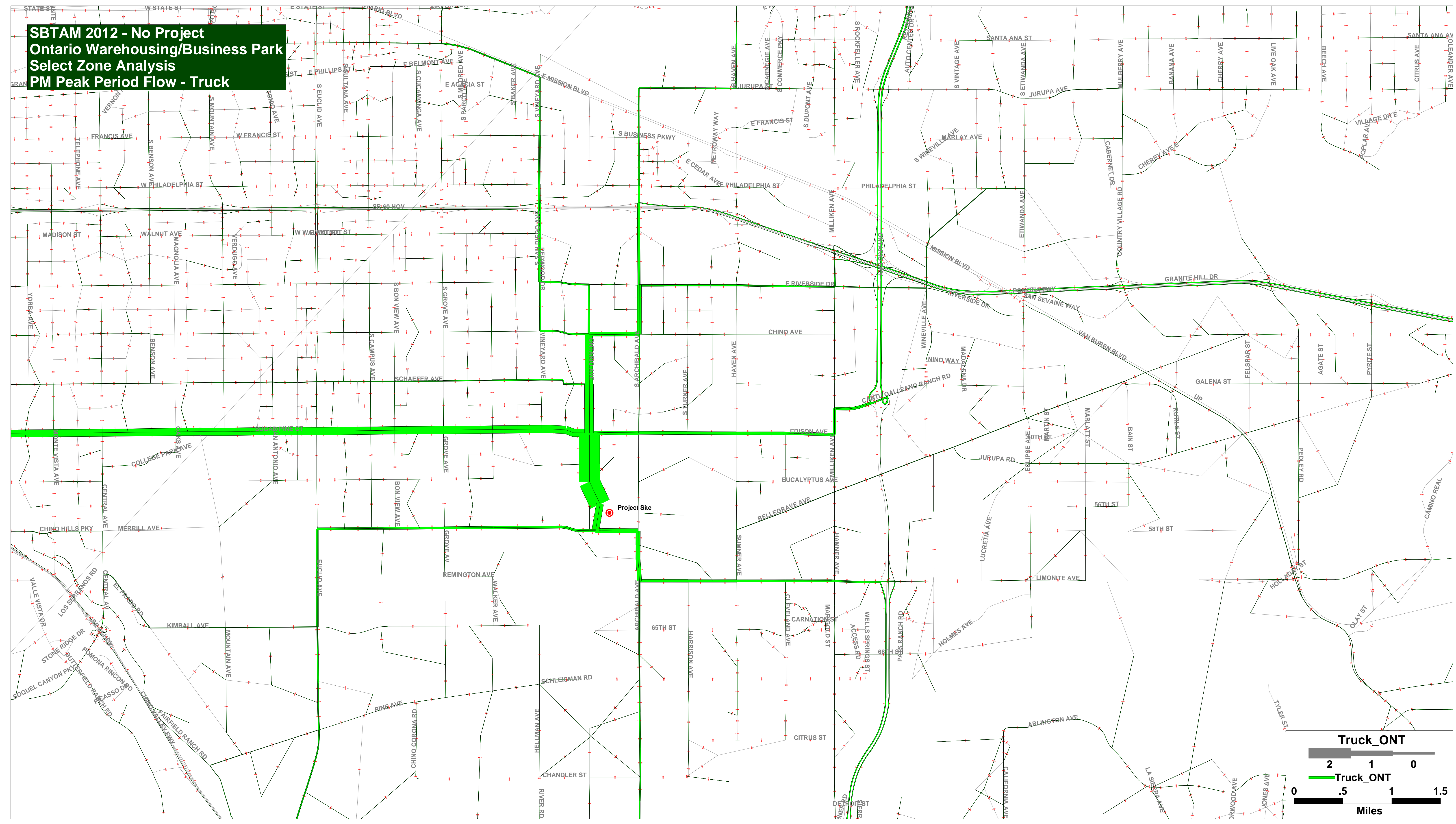


**SBTAM 2012 - No Project  
Ontario Warehousing/Business Park  
Select Zone Analysis  
PM Peak Period Flow**



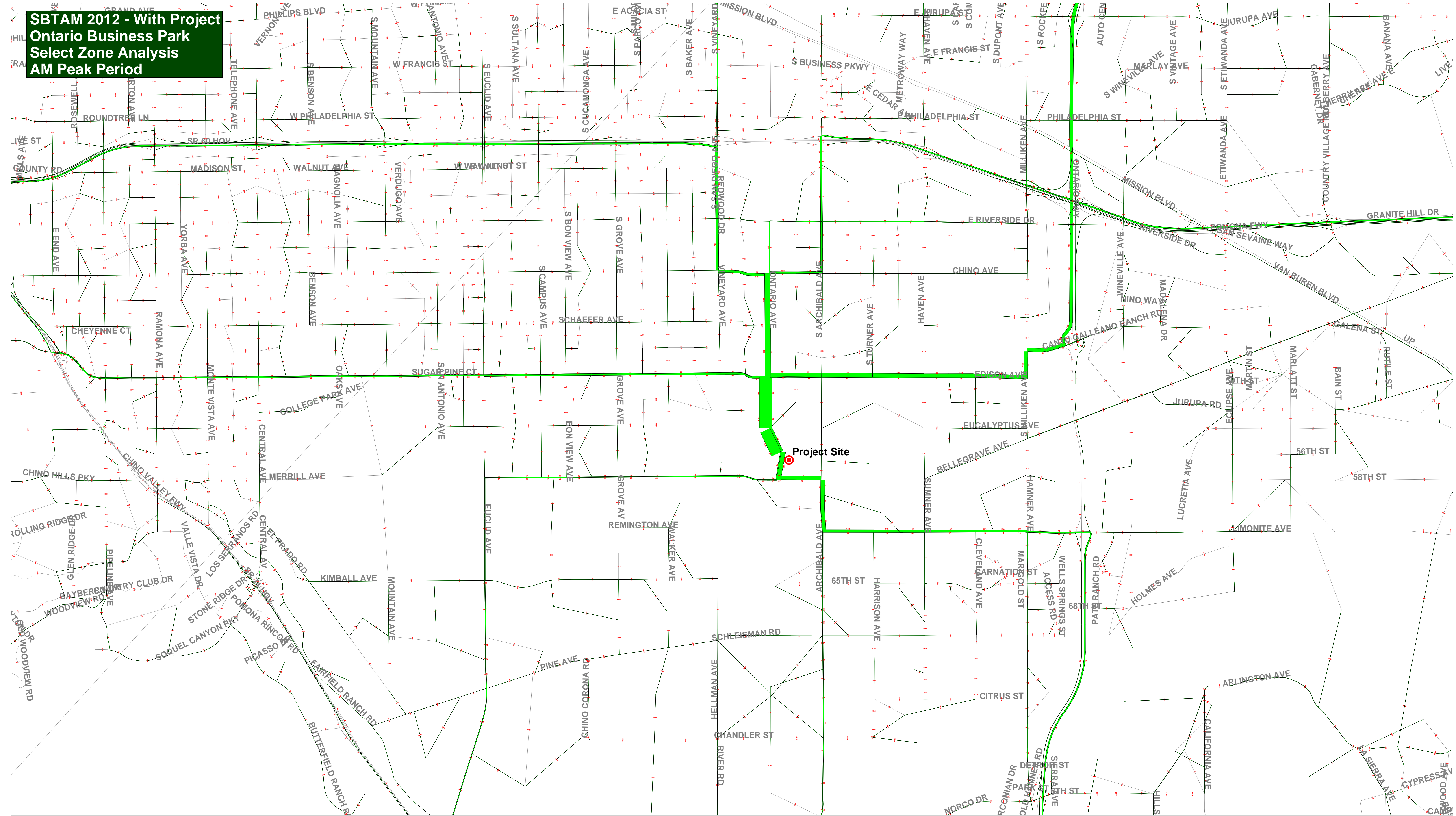


**SBTAM 2012 - No Project  
Ontario Warehousing/Business Park  
Select Zone Analysis  
PM Peak Period Flow - Truck**



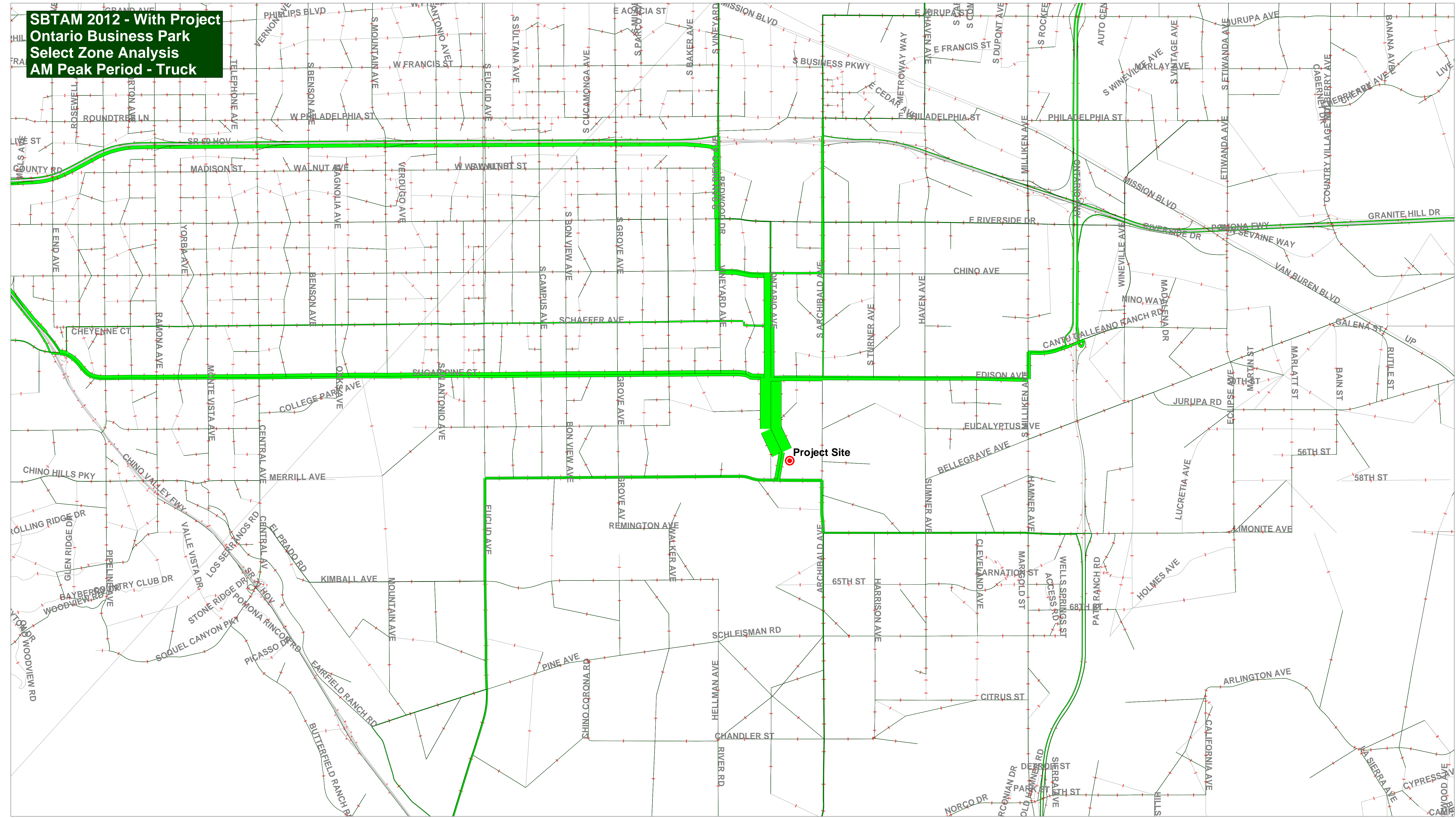


**SBTAM 2012 - With Project**  
**Ontario Business Park**  
**Select Zone Analysis**  
**AM Peak Period**



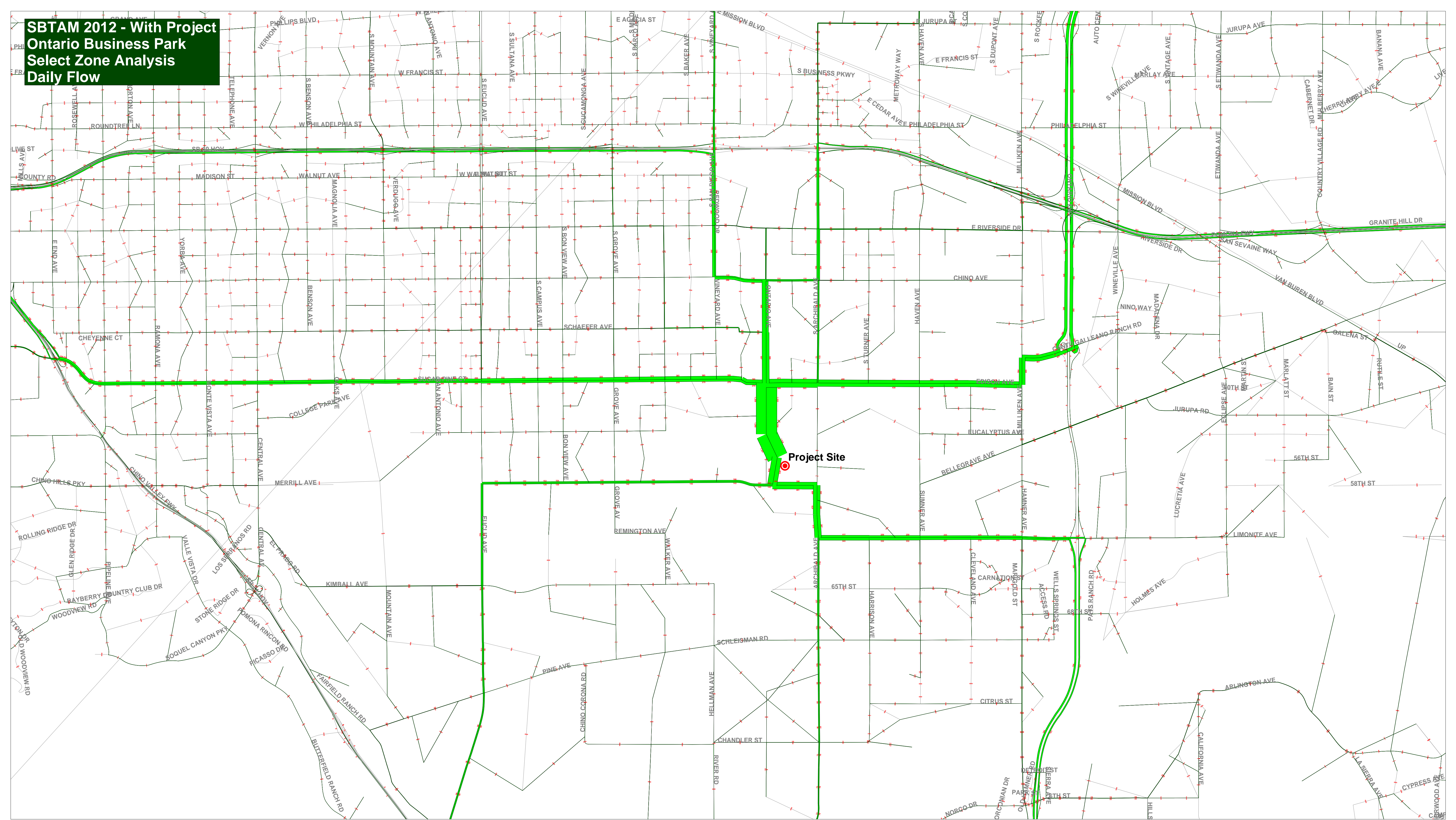


**SBTAM 2012 - With Project**  
**Ontario Business Park**  
**Select Zone Analysis**  
**AM Peak Period - Truck**



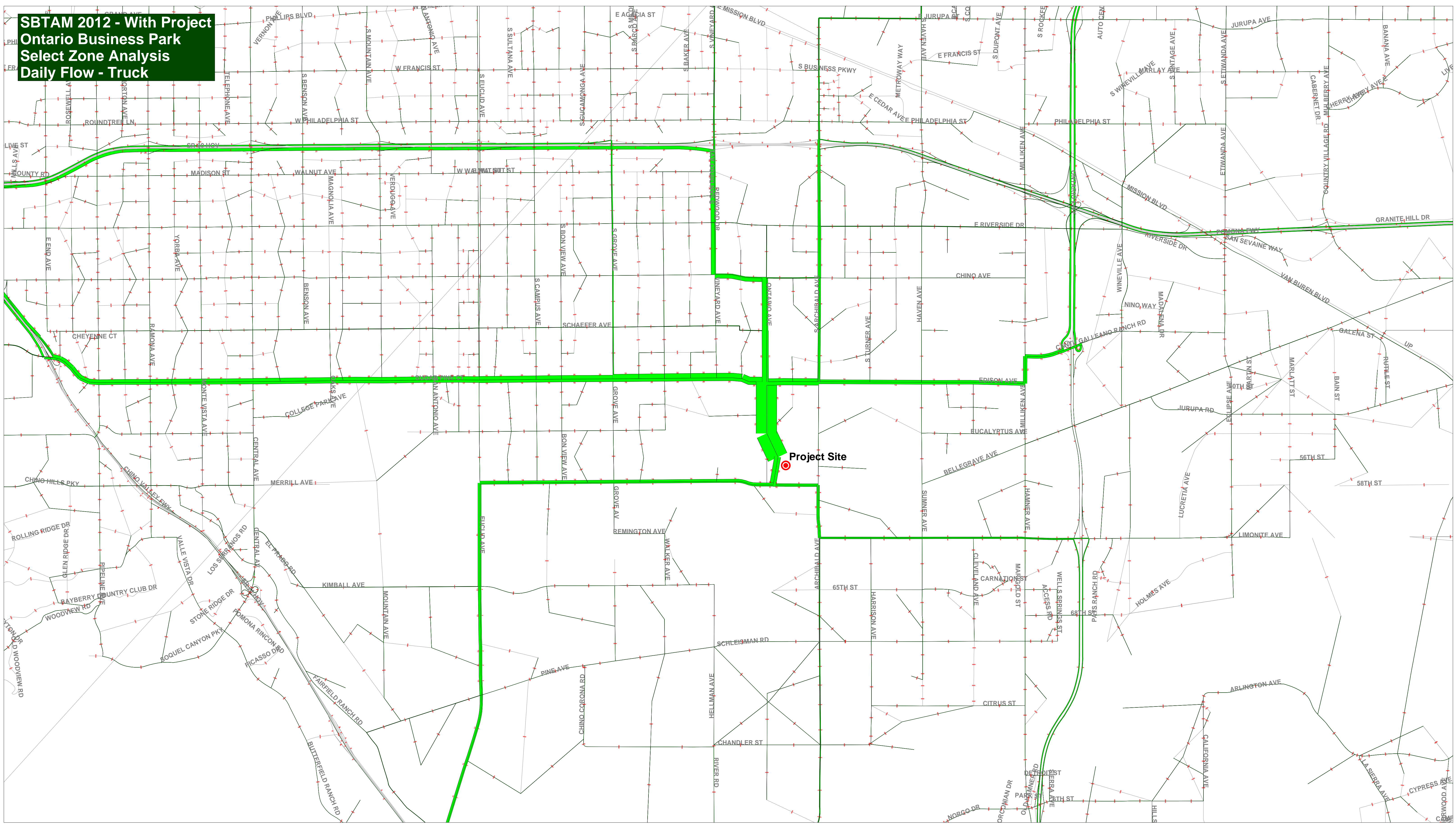


**SBTAM 2012 - With Project**  
**Ontario Business Park**  
**Select Zone Analysis**  
**Daily Flow**



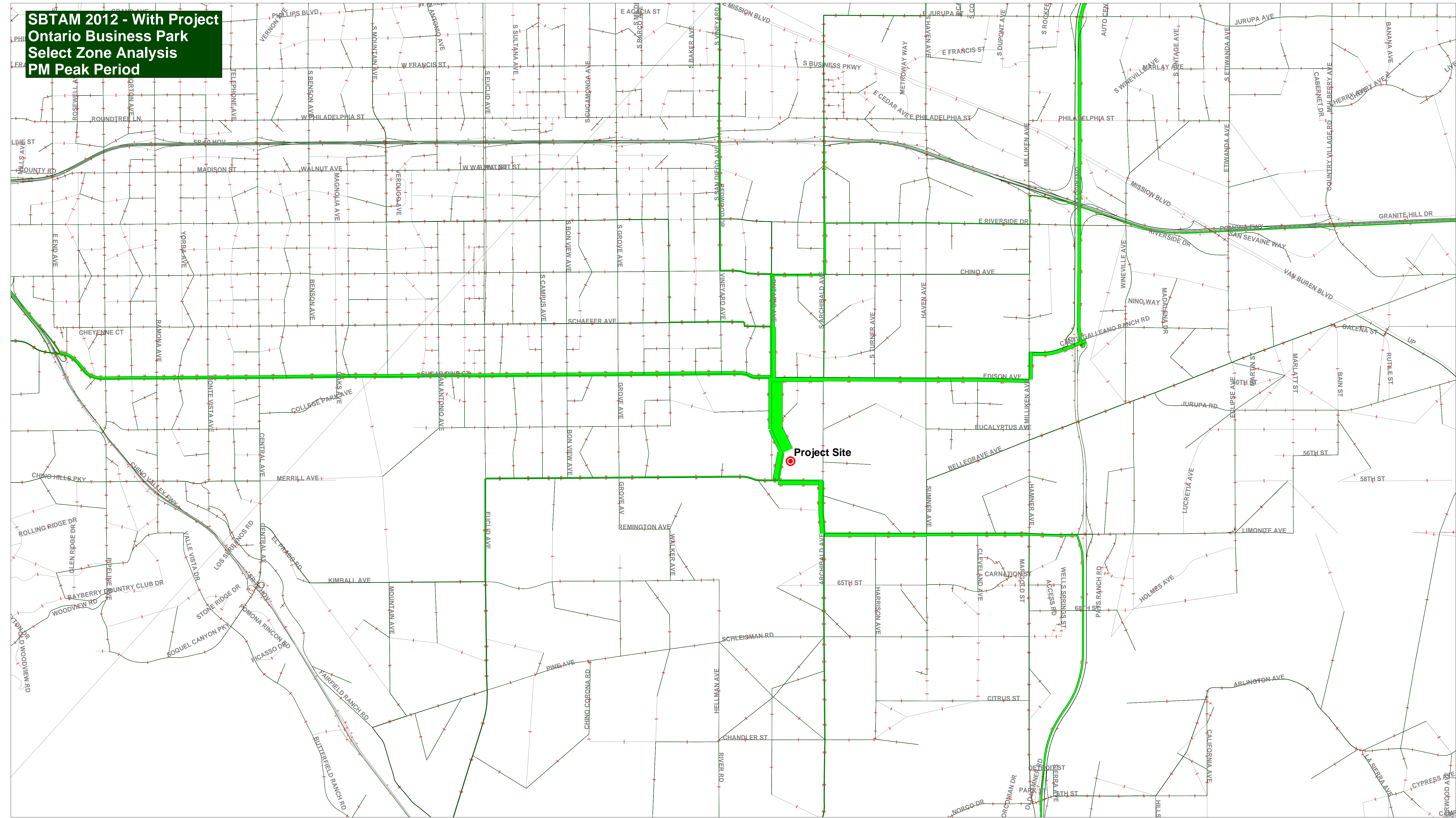


# SBTAM 2012 - With Project Ontario Business Park Select Zone Analysis Daily Flow - Truck





**SBTAM 2012 - With Project**  
**Ontario Business Park**  
**Select Zone Analysis**  
**PM Peak Period**

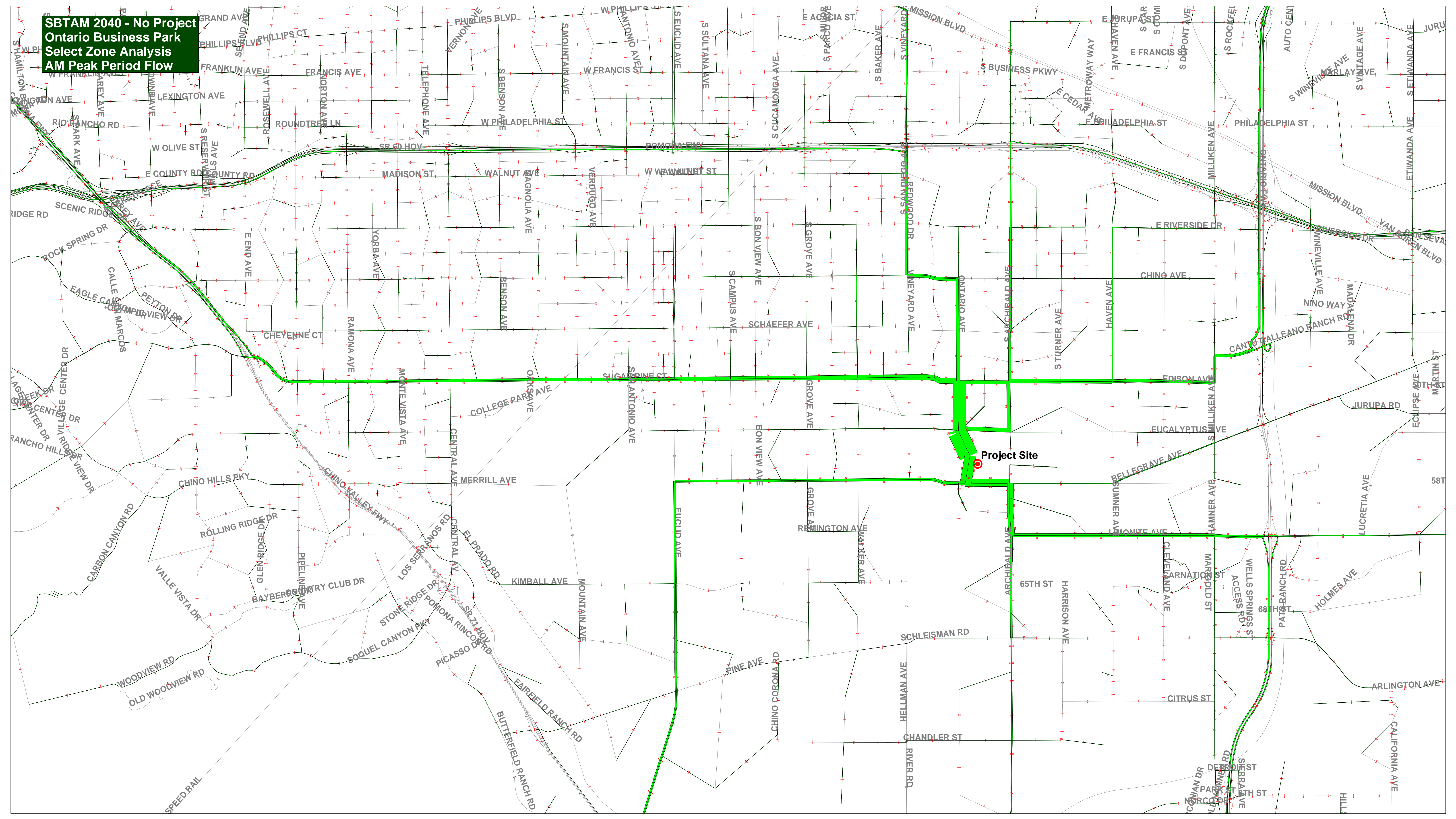






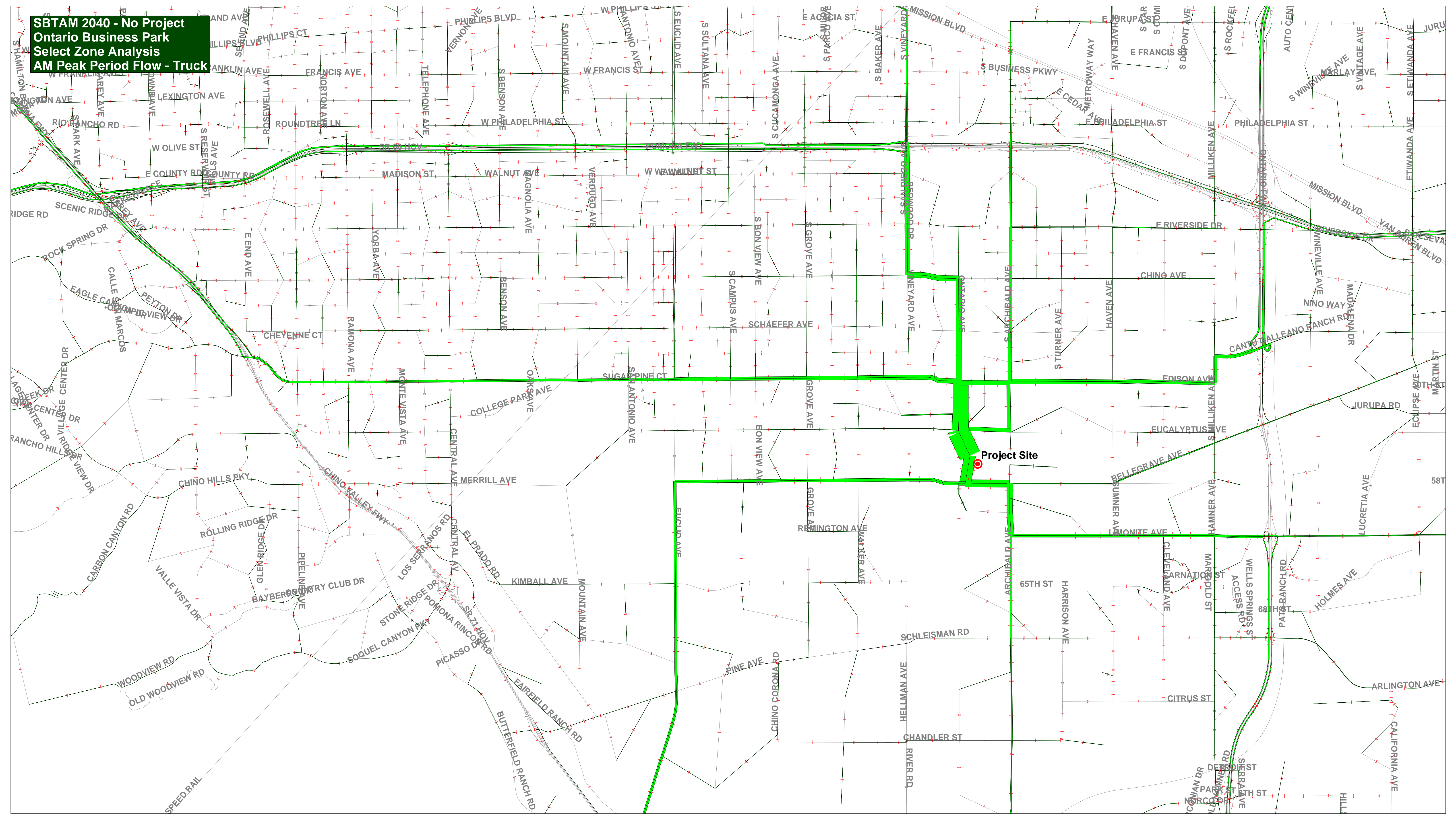


**SBTAM 2040 - No Project**  
**Ontario Business Park**  
**Select Zone Analysis**  
**AM Peak Period Flow**





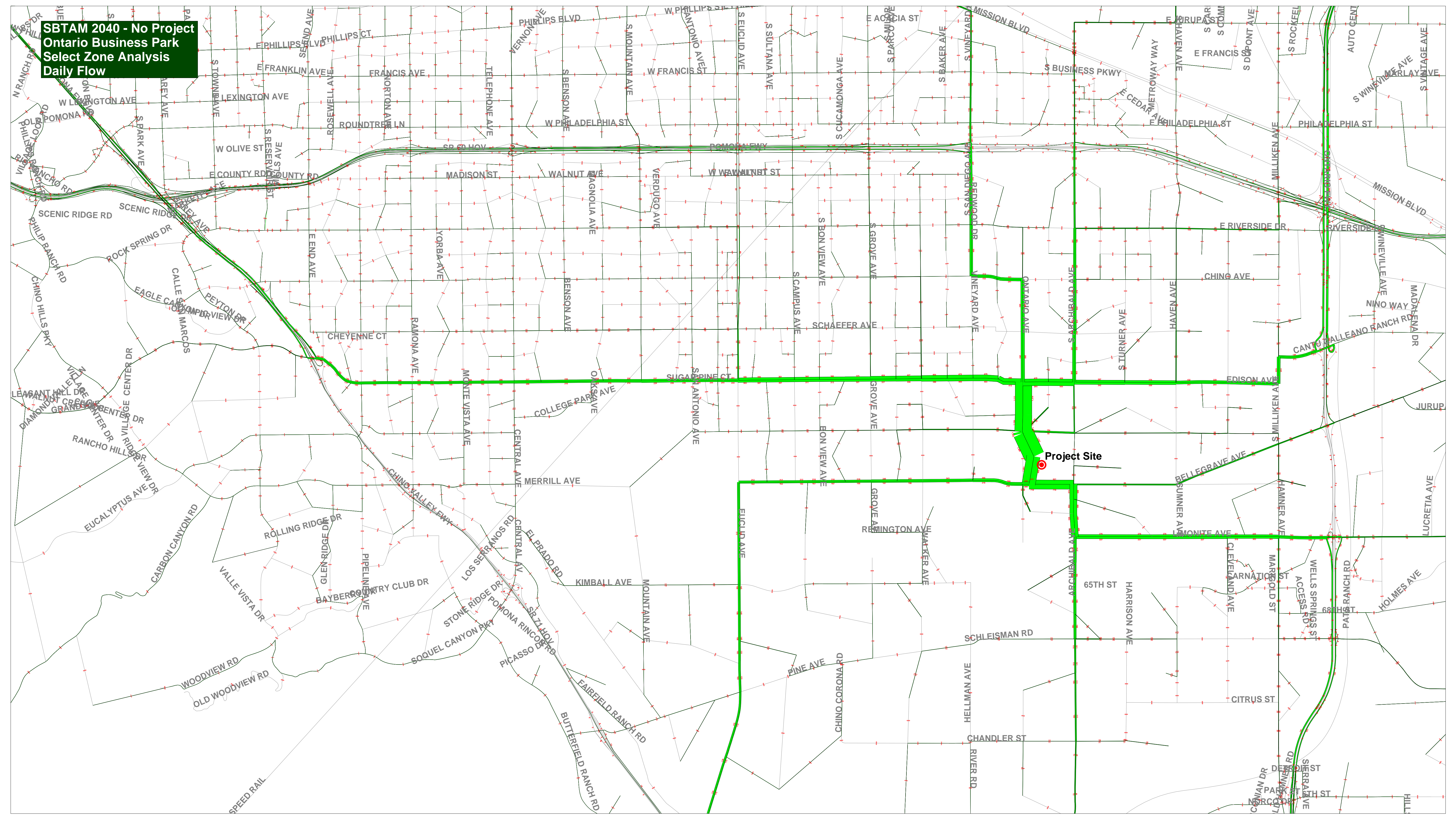
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**Select Zone Analysis**  
**AM Peak Period Flow - Truck**





**SBTAM 2040 - No Project**  
**Ontario Business Park**  
**Select Zone Analysis**  
**Daily Flow**

**Project Site**





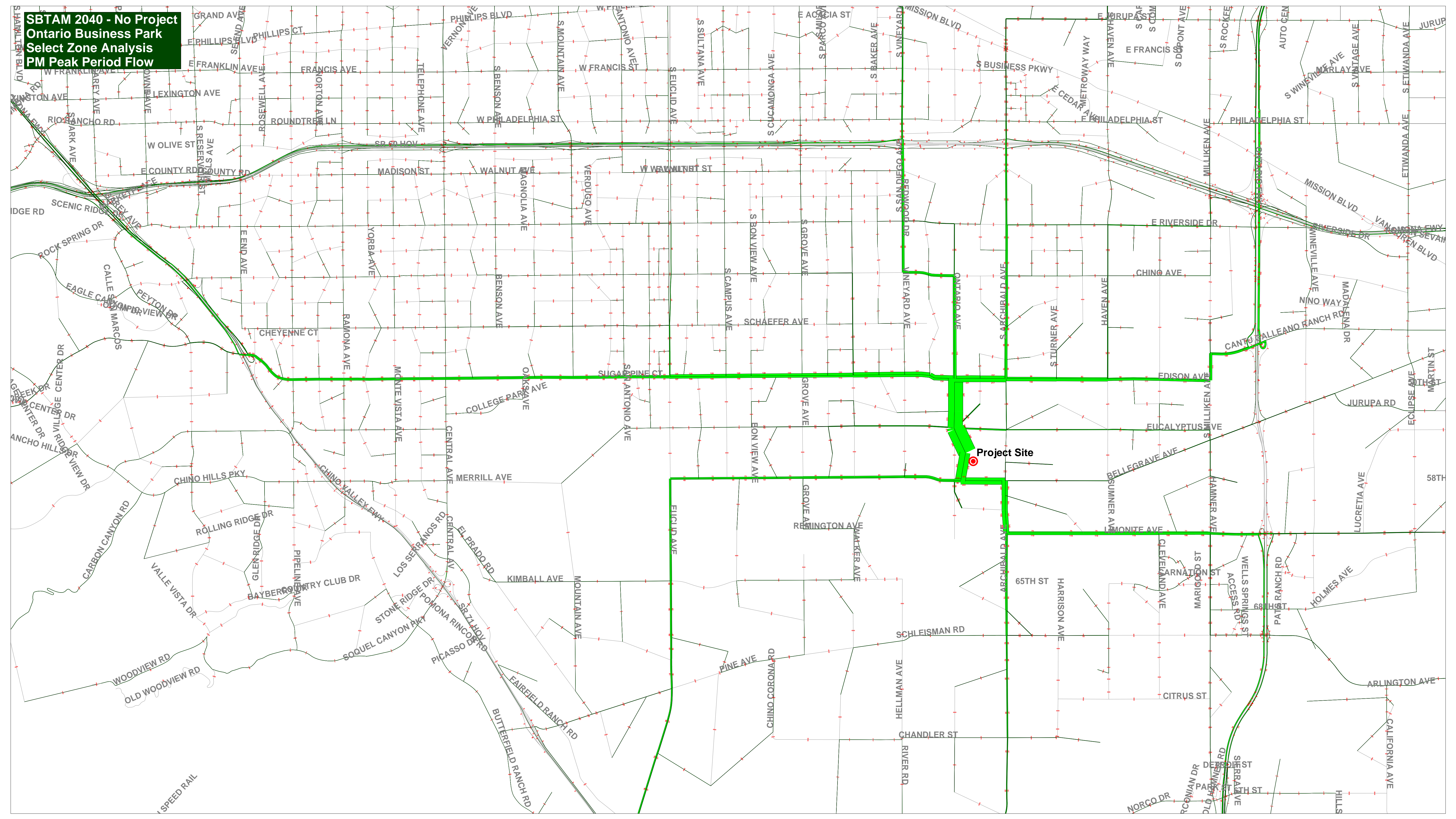
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Daily Flow - Truck**



Project Site

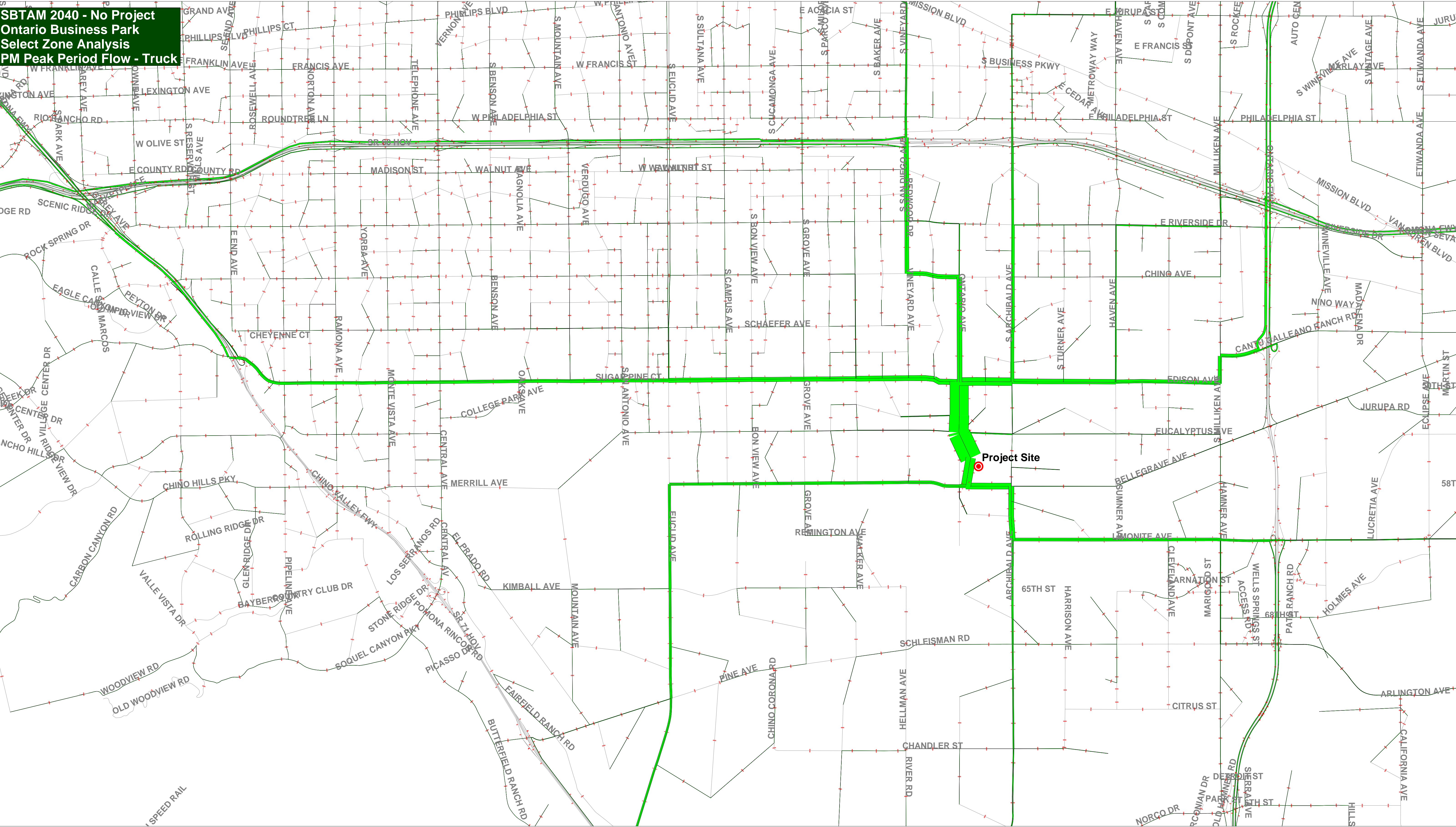


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Select Zone Analysis  
PM Peak Period Flow**



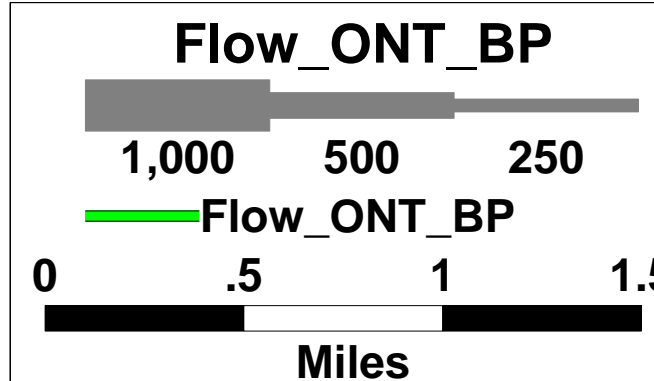
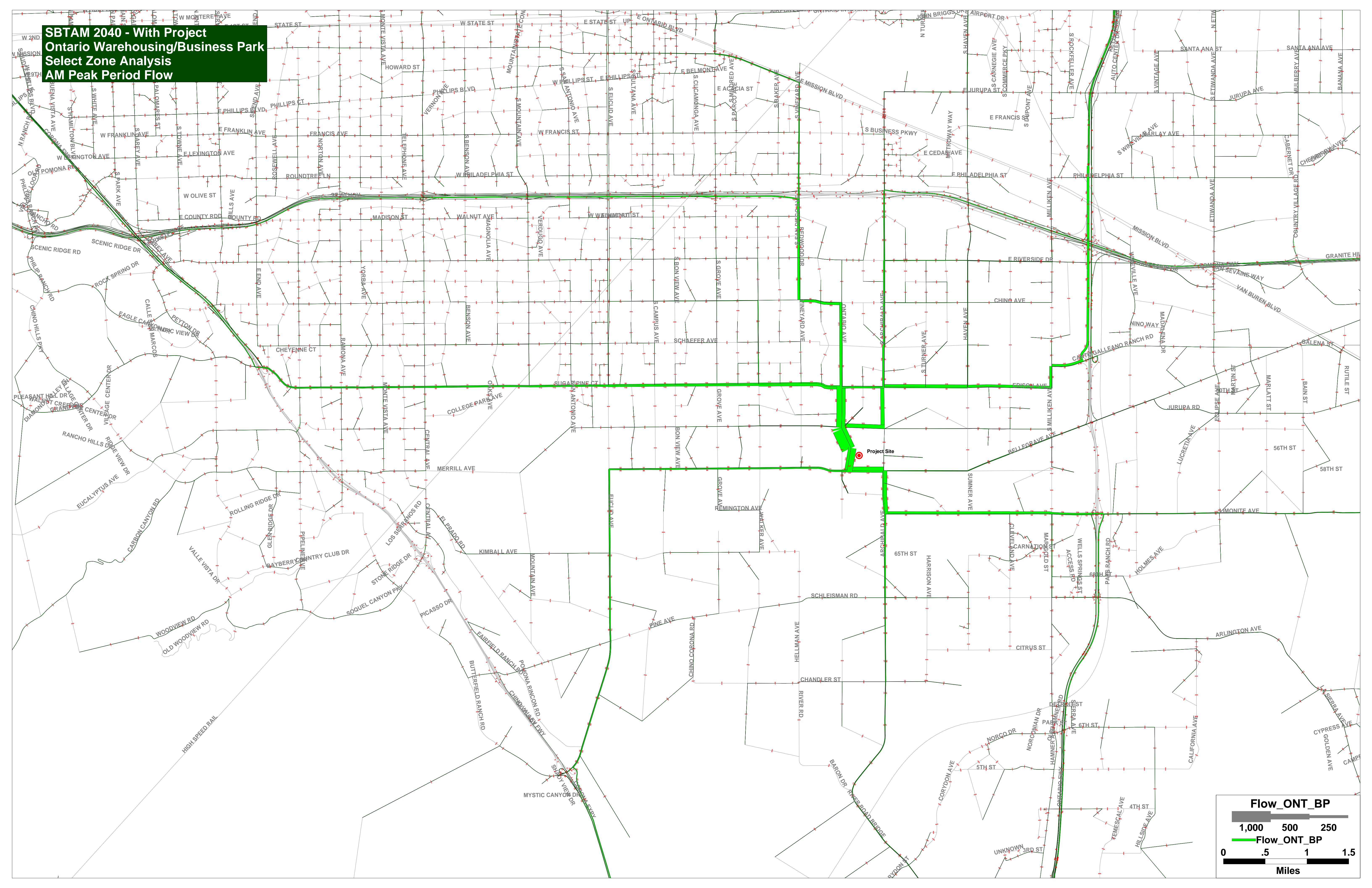


**SBTAM 2040 - No Project**  
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**Select Zone Analysis**  
**PM Peak Period Flow - Truck**



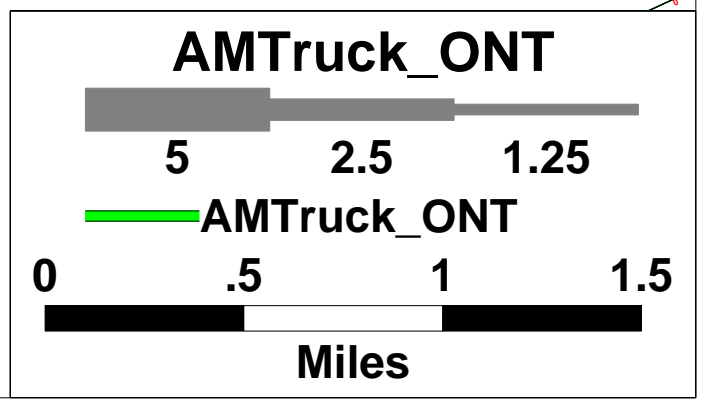
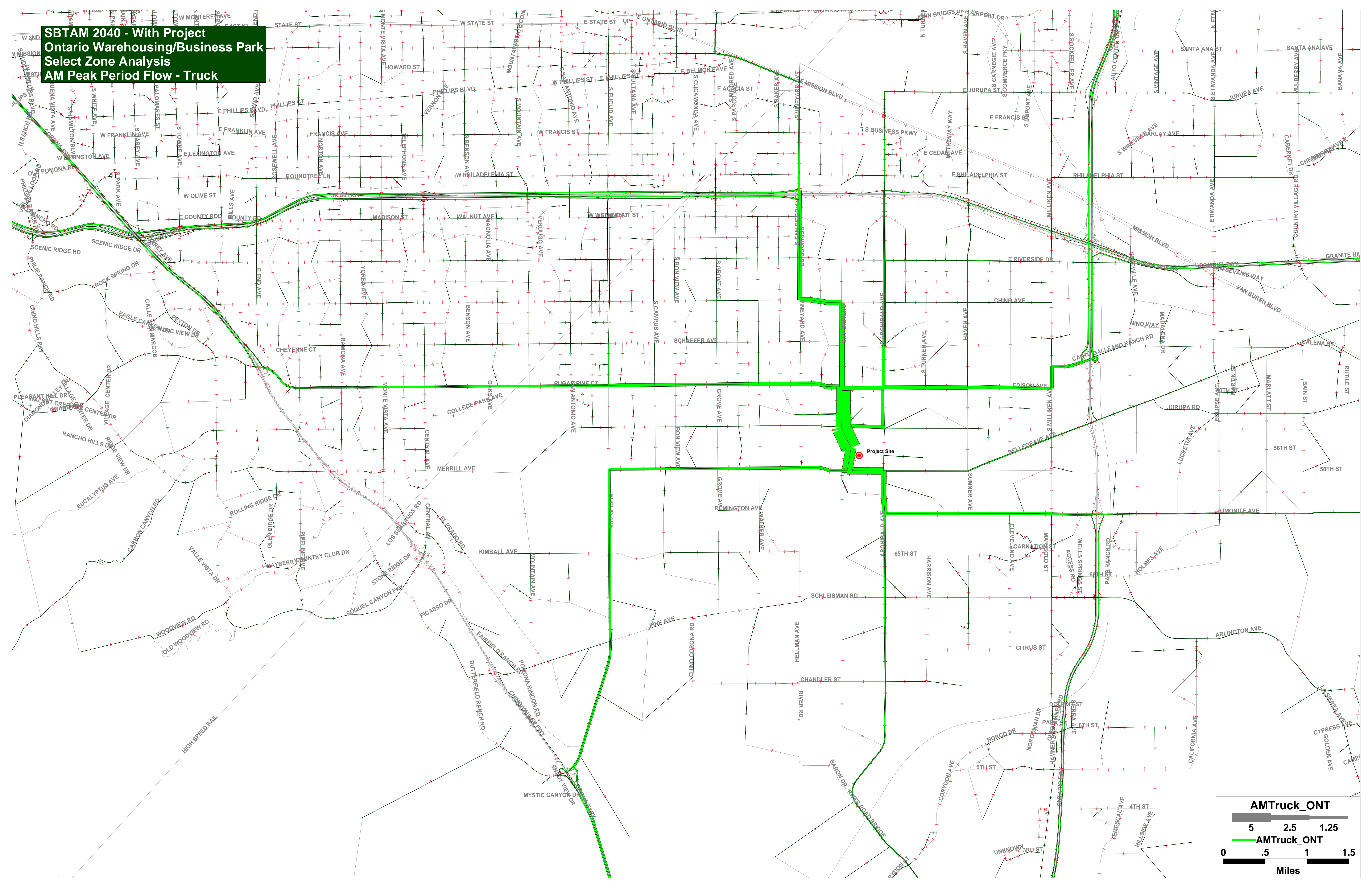


**SBTAM 2040 - With Project**  
**Ontario Warehousing/Business Park**  
**Select Zone Analysis**  
**AM Peak Period Flow**



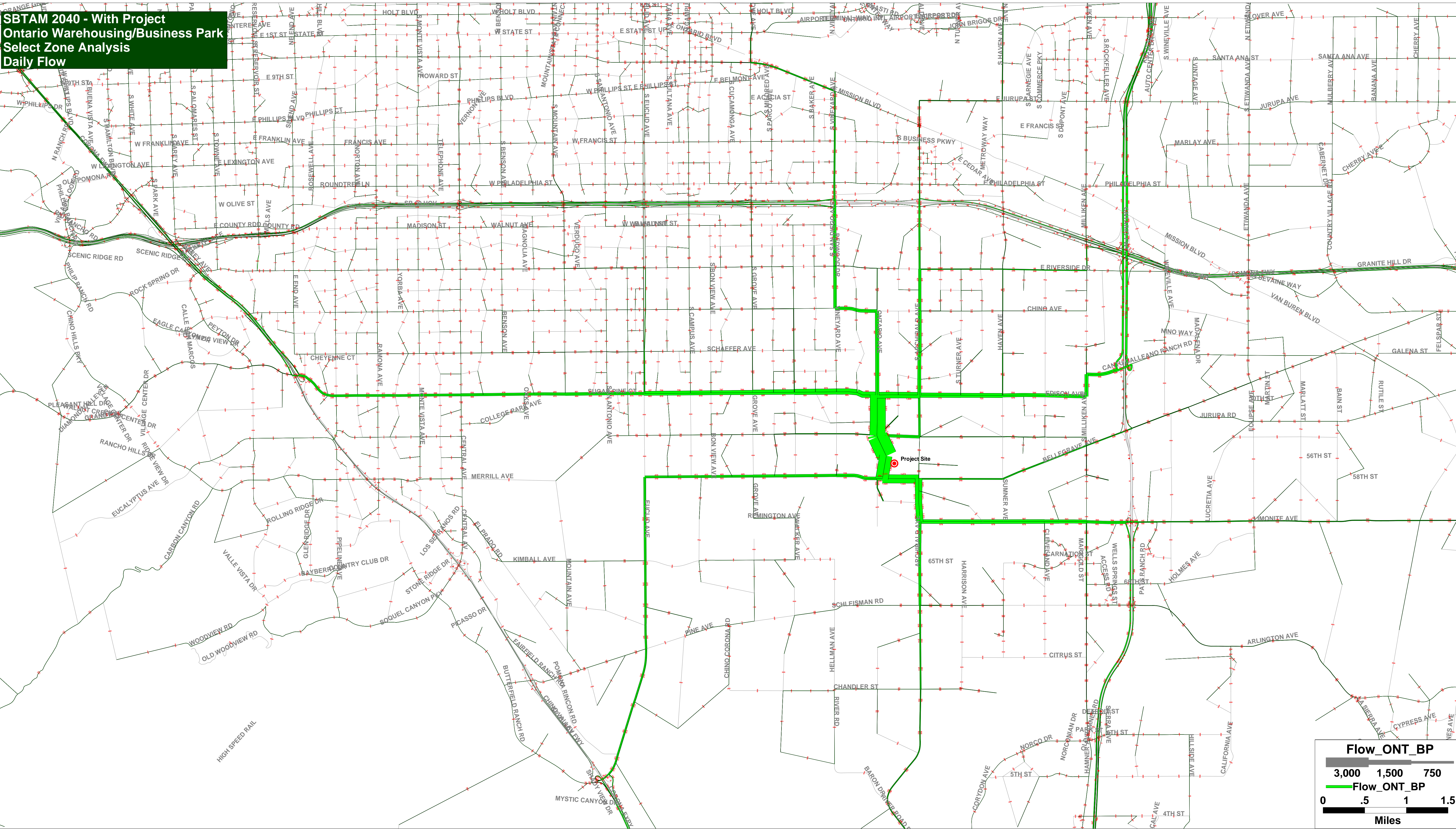


**SBTAM 2040 - With Project**  
**Ontario Warehousing/Business Park**  
**Select Zone Analysis**  
**AM Peak Period Flow - Truck**





**SBTAM 2040 - With Project**  
**Ontario Warehousing/Business Park**  
**Select Zone Analysis**  
**Daily Flow**



**Flow\_ONT\_BP**

3,000	1,500	750	
0	.5	1	1.5

Miles



**SBTAM 2040 - With Project**  
**Ontario Warehousing/Business Park**  
**Select Zone Analysis**  
**Daily Flow - Truck**

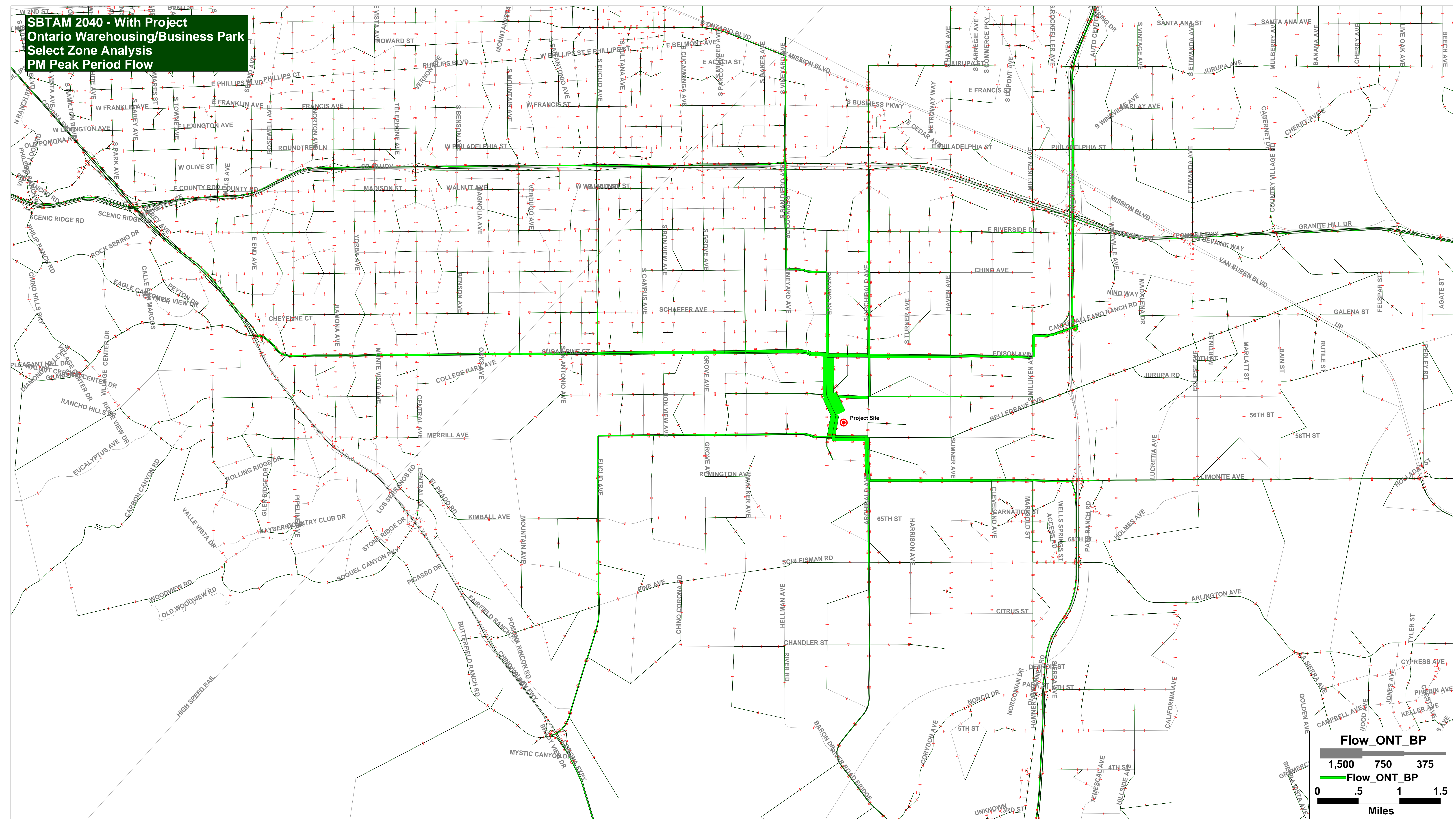


**DayTruck\_ONT**

3,000	1,500	750	
DayTruck_ONT			
0	.5	1	1.5
Miles			



**SBTAM 2040 - With Project**  
**Ontario Warehousing/Business Park**  
**Select Zone Analysis**  
**PM Peak Period Flow**

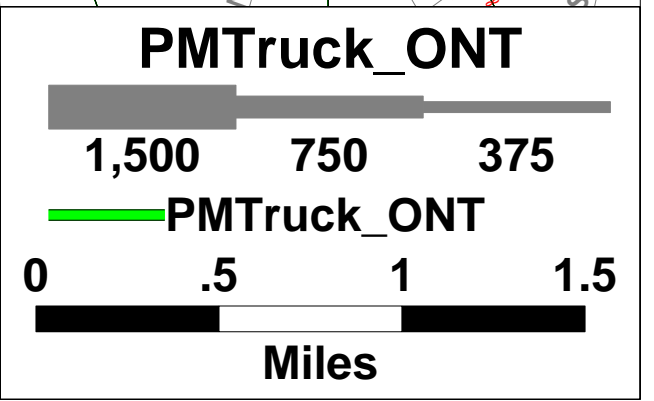
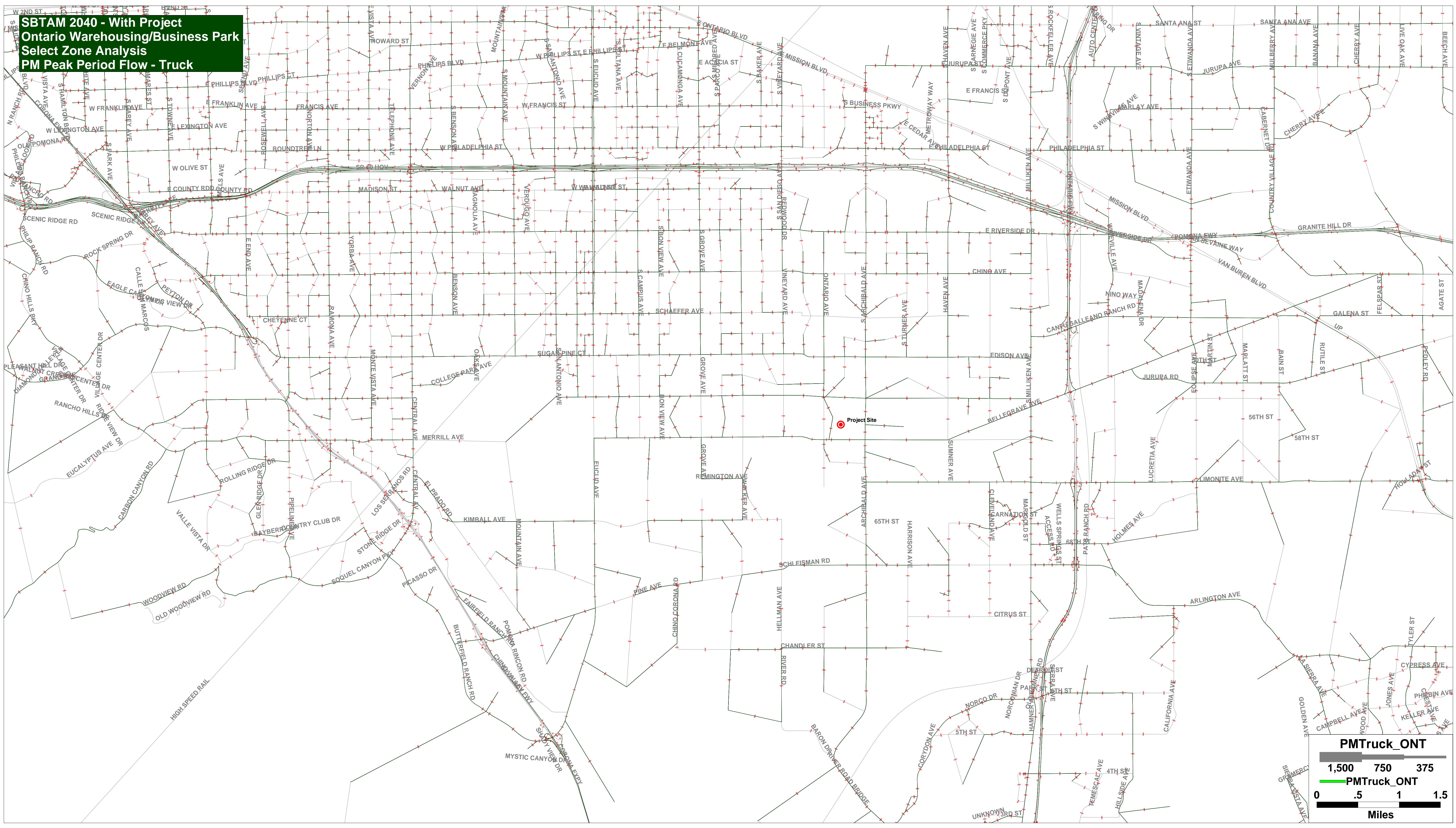


**Flow\_ONT\_BP**

1,500	750	375	
Flow_ONT_BP			
0	.5	1	1.5
Miles			

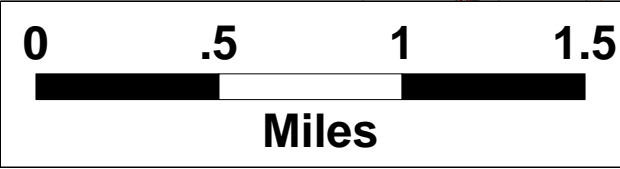
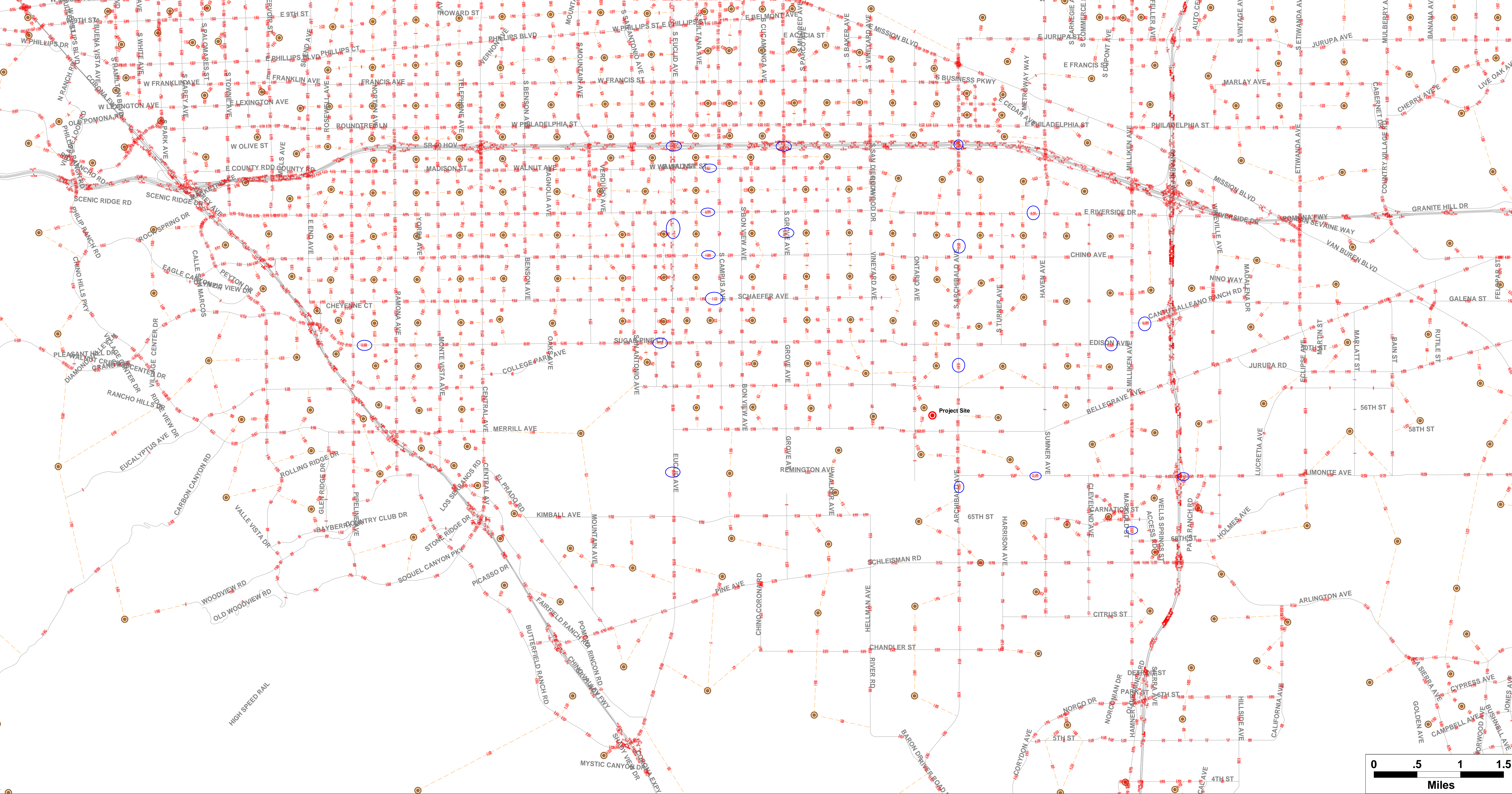


**SBTAM 2040 - With Project  
Ontario Warehousing/Business Park  
Select Zone Analysis  
PM Peak Period Flow - Truck**





**SBTAM 2040**  
**Ontario Warehousing/Business Park**  
**Daily Flow**







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**WEST ONTARIO COMMERCE CENTER  
SPECIFIC PLAN  
TRAFFIC IMPACT ANALYSIS  
ONTARIO, CA  
MARCH 2018**

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**SECTION 1.0** INTRODUCTION AND EXECUTIVE SUMMARY

The purpose of this traffic impact analysis (TIA) is to identify intersection and roadway infrastructure requirements and to evaluate traffic conditions associated with the proposed West Ontario Commerce Center (WOCC) Specific Plan development. The results of this analysis have been used to identify roadway and intersection infrastructure improvements, including off-site mitigations, which accommodate traffic generated by West Ontario Commerce Center and surrounding developments in accordance with City of Ontario circulation network minimum level of service LOS D criteria for roadway segments and LOS E for intersections.

Forty-eight (48) signalized/unsignalized intersections are included in this analysis together with surrounding roadway segments. The Project study area is identified and discussed in more detail in Section II of this report.

Roadway link LOS was determined based on volume-to-capacity (v/c) analysis using City of Ontario General Plan roadway capacities. Intersection LOS was determined using the 2010 Highway Capacity Manual (HCM) signalized/unsignalized operational methods using City and San Bernardino County Transportation Authority (SBCTA) CMP traffic analysis guidelines.

The West Ontario Commerce Center project location and vicinity is shown on Figure 1-1. The proposed 119-acre Specific Plan project will provide up to 2,350,005 square feet of warehouse use and 555,5050 square feet for business park use. A preliminary Project site plan is shown on Figure 1-2. The proposed Specific Plan is forecast to generate up to 16,830 passenger car equivalent (PCE) vehicle trips per day which is 31.5% less than what could be allowed under the current General Plan.

The project is anticipated to be completed in 2023. This study analyzes the project opening year of 2023 and a build-out horizon year of 2040 in addition to existing 2017 conditions. The scenarios analyzed in this study include the following:

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- Existing (2017)
- Existing (2017) with Project
- Opening Year Cumulative (2023) No Project
- Opening Year Cumulative (2023) With Project
- Horizon Year (2040) No Project
- Horizon Year (2040) With Project

Traffic generation was based on rates/equations identified in the 9<sup>th</sup> Edition of the Institute of Transportation Engineers (ITE) *Trip Generation* which was the latest edition available at time of preparation of this study. Because the site is not a mixed-use or retail site, no internal trip capture or pass-by traffic is considered for this study.

Project trip generation volumes were reviewed and approved by the City of Ontario prior to assigning these trips to the study area roadway network for analysis. The project external trip distribution used for Project 2023 and 2040 build-out year analysis were derived from San Bernardino Association of Governments (SANBAG) SBTAM select zone model runs.

Following assignment to the study area network per the SBTAM trip distribution, project traffic volumes were combined with existing traffic volumes and cumulative traffic volumes from other identified development projects for the 2023 Project Opening Year analysis scenarios. Traffic volumes for this study were conducted in March of 2017. Traffic volumes for other development projects were generally taken directly from the approved traffic studies for those projects. In the few cases (4) where traffic studies were not available, traffic volumes for cumulative projects were based on applying ITE trip generation rates to proposed land use quantities. Future Year 2040 build-out scenario traffic volumes were derived from and calibrated to SBTAM model output.

Total study network traffic volumes were analyzed for the Project opening year (2023) to identify short-term cumulative project impacts and mitigations, as necessary. Analysis of Year 2040 build-out with Project conditions was conducted to confirm Master-Planned

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roadway and intersection infrastructure improvements provide target level of service (LOS) and to identify the Project's fair share contribution to mitigate future cumulative project impacts as necessary.

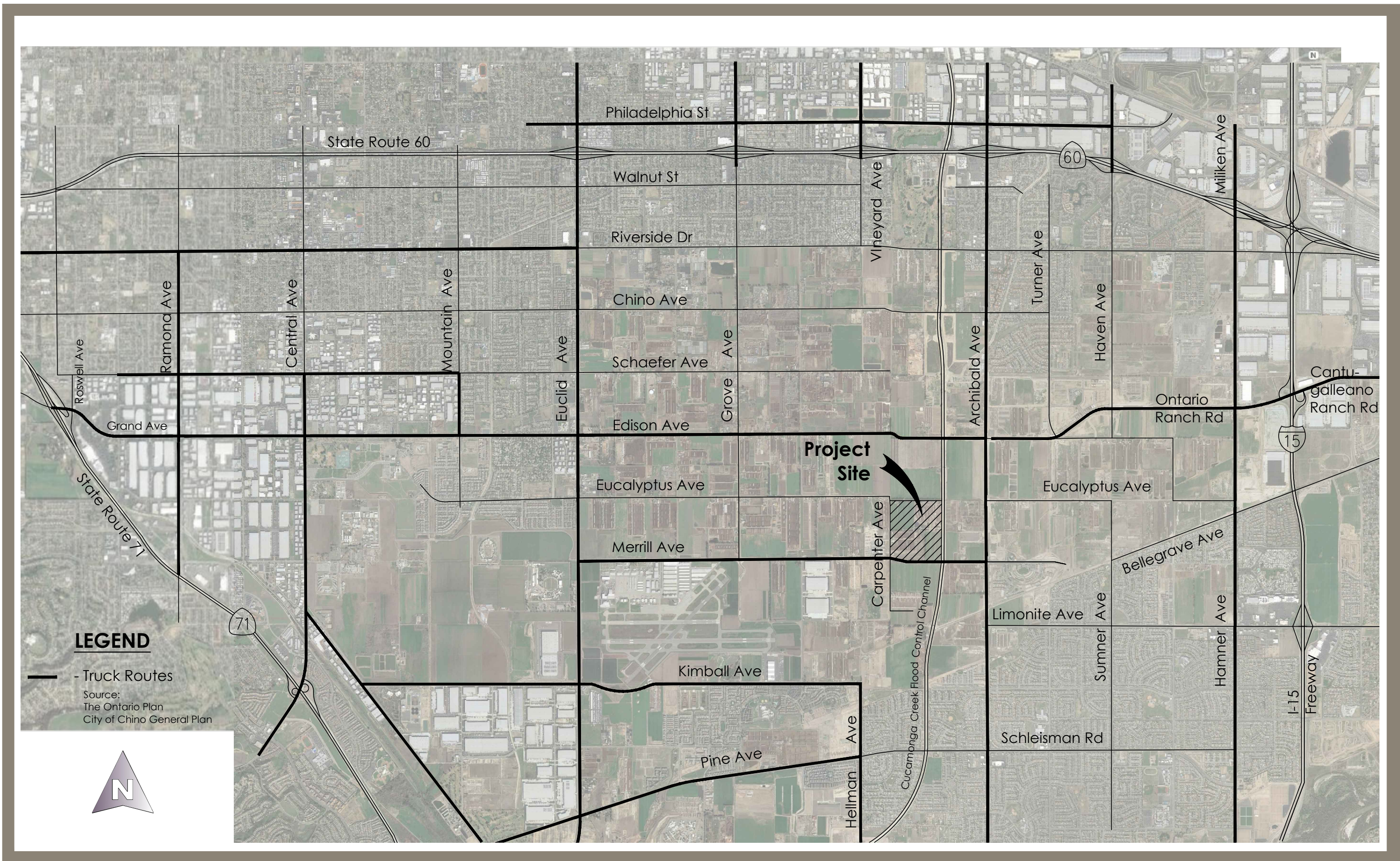
Each project year analysis scenario includes roadway and intersection infrastructure improvements planned for completion by their respective analysis year through established Developer Impact Fee (DIF) funding programs. No separate City capital improvement project (CIP) improvements have been identified within the study area for either scenario. Required intersection mitigation improvements beyond those included in Master-Planned DIF funding programs, have been identified on a Project "fair share" basis.

This study identifies a Project fair share contribution for mitigation measures at seventeen (17) off-site intersections to meet City of Ontario, Chino, Eastvale, and Caltrans LOS criteria. These intersections have been identified to have significant Project impact considering existing with Project, future opening year (2023) cumulative project, and 2040 build-out with West Ontario Commerce Center project volumes. Table 1-1 identifies these intersections together with specific mitigation improvements, agency jurisdiction, rough cost estimates, and fair share percentage and cost. Table 1-2 provides calculation of fair share contribution for each intersection. Fair share percentage was calculated by dividing the project generated traffic by total new traffic that will be generated by 2040 which includes project traffic and cumulative projects traffic.

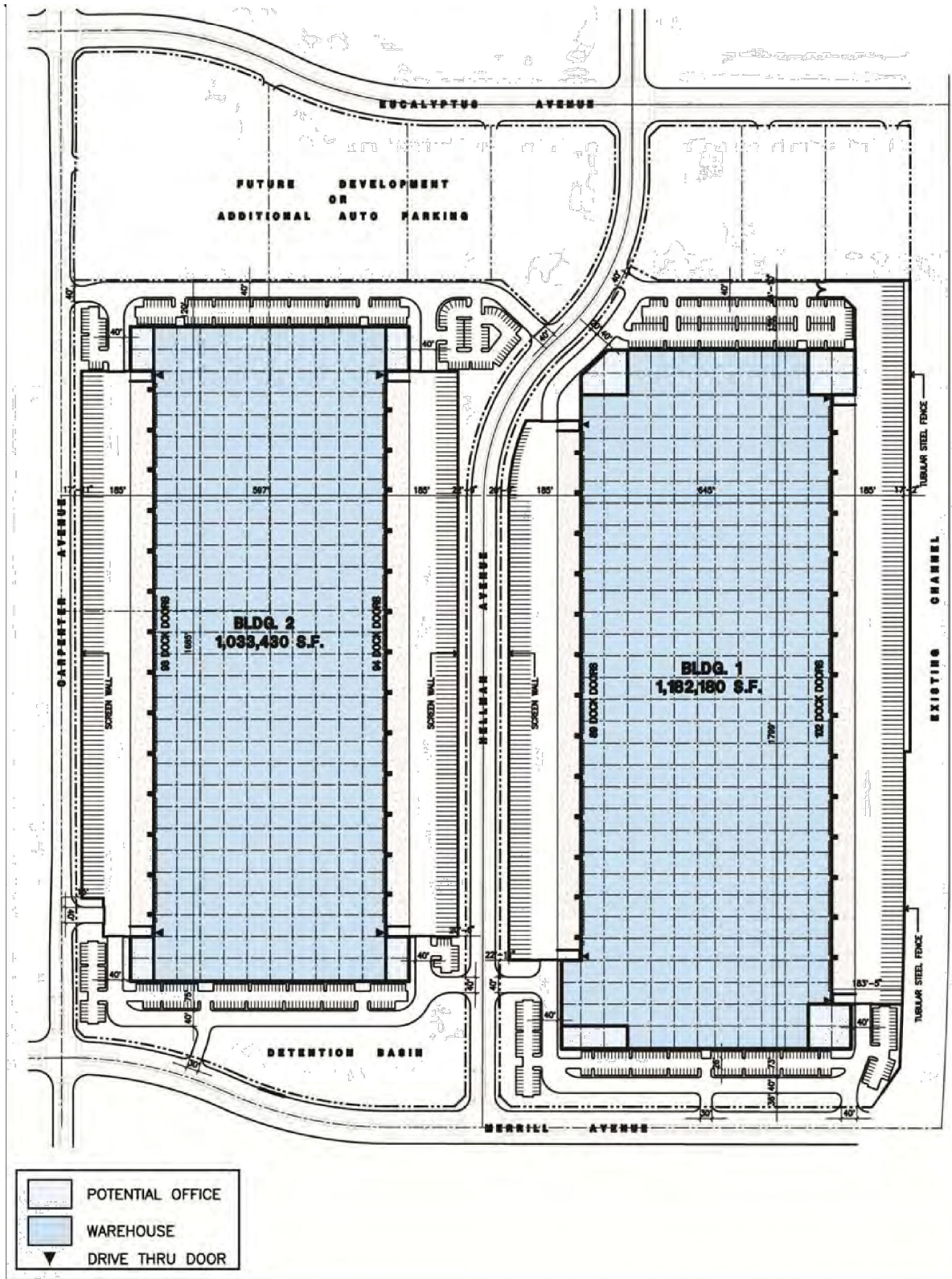
The total estimated cost of identified study area intersection improvements is \$20,315,520. Based on the Project fair share percentages shown on Table 1-2, the Project's fair share cost is estimated at \$1,624,723. The estimates in Table 1-1 are rough order of magnitude and are provided for discussion purposes only. They do not impart any legal responsibility or formula for contributions or mitigation, and are not intended to be binding.

This study confirms that the proposed Project Specific Plan infrastructure improvements will provide acceptable LOS along the roadways and intersections providing access to the site and are appropriately sized for forecast Project volumes.









Source: HPA Architecture, 2016

**Table 1-1  
 Summary of Improvements and Rough Order of Magnitude Costs for Intersections**

No.	Intersection Location	Jurisdiction	Existing (2017)	E+P (Project Buildout)	2023 With/Without Project	2040 Without/With Project	Improvements in City DIF?	DIF Project No.	Total Cost	Fair Share %	Fair Share Cost	Significant Impact?
4	Euclid Ave/SR-60 WB Ramps	Caltrans, Ontario	None	None	Add 2nd NBL	Same	Yes	ST-107	\$550,000	6.10%	\$33,565	No
5	Euclid Ave/SR-60 EB Ramps	Caltrans, Ontario	None	None	Add 2nd SBL	Same	Yes	ST-107	\$650,000	7.02%	\$45,649	No
8	Archibald Ave/ SR-60 WB Ramps	Caltrans, Ontario	None	None	Add 2nd NBL Restripe WBL to WBLTR	Same Same	Yes Yes	ST-106	\$200,000 \$2,000	20.24%	\$40,479 \$405	No
								<b>Total</b>	<b>\$202,000</b>		<b>\$40,883</b>	
9	Archibald Ave/ SR-60 EB Ramps	Caltrans, Ontario	None	None	Restripe EBL to EBLTR Add EBL	Same Same	Yes Yes	ST-106	\$2,000 \$74,200	18.93%	\$379 \$14,046	No
					Restripe for 3 NBT	Yes			\$37,100		\$7,023	
					Add free NBR	Yes			\$250,000		\$47,325	
					Add 2nd SBL	Yes			\$100,000		\$18,930	
								<b>Total</b>	<b>\$463,300</b>		<b>\$87,703</b>	
13	Euclid Ave/Riverside Dr	Caltrans, Chino, Ontario	None	None	Add 3rd NBT Add 3rd SBT	Same Same	Yes Yes		\$267,120 \$267,120	3.98%	\$10,622 \$10,622	No
								<b>Total</b>	<b>\$534,240</b>		<b>\$21,244</b>	
15	Archibald Ave/Riverside Dr	Ontario	None	None	Add 2nd NBL Add 2nd SBL Add EBR Add WBR w/O.L.	Same Same Same Same	Yes Yes No No		\$74,200 \$74,200 \$74,200 \$185,500	34.03%	\$25,249 \$25,249 \$25,249 \$63,124	No
								<b>Total</b>	<b>\$408,100</b>		<b>\$138,872</b>	
16	Euclid Ave/Chino Ave	Caltrans, Chino, Ontario	None	None	Add WBL	Same	Yes		\$74,200	4.23%	\$3,141	Yes
17	Grove Ave/Chino Ave	Ontario	None	None	Signalize Intersection	Same	Yes	ST-024	\$350,000	21.54%	\$75,383	Yes
18	Archibald Ave/Chino Ave	Ontario	None	None	Add 2nd EBT Add EBR	Same Same	Yes No		\$267,120 \$74,200	11.84%	\$31,626 \$8,785	No
					Add 3rd SBT	Yes			\$267,120		\$31,626	
								<b>Total</b>	<b>\$608,440</b>		<b>\$72,038</b>	
22	SR-71 SB Ramps/Grand Ave	Caltrans, Chino	None	None	Overlap SBR	Same	No		\$111,300	60.53%	\$67,365	Yes
26	Euclid Ave/Edison Ave	Caltrans, Chino, Ontario	None	None	Add 2nd NBL Add 3rd NBT Add 3rd SBT Add 2nd WBT	Same Same Same Same	Yes Yes Yes Yes		\$74,200 \$267,120 \$267,120 \$267,120	15.82%	\$11,740 \$42,263 \$42,263 \$42,263	No
								<b>Total</b>	<b>\$875,560</b>		<b>\$138,527</b>	
27	Grove Ave/Edison Ave	Ontario	None	Signalize Intersection	Same	Same	Yes	ST-024	\$350,000	30.64%	\$107,233	Yes
28	Archibald Ave/Edison Ave	Ontario	None	None	Add 2nd NBL Add 3rd NBT Add 3rd SBT Add 3rd EBT Add 2nd WBT Add 2nd SBL Add 3rd WBT	Same Same Same Same Same Same Same	Yes No No Yes Yes Yes Yes		\$74,200 \$267,120 \$267,120 \$267,120 \$267,120 \$74,200 \$267,120	12.35%	\$9,160 \$32,976 \$32,976 \$32,976 \$32,976 \$9,160 \$32,976	Yes
								<b>Total</b>	<b>\$1,484,000</b>		<b>\$183,200</b>	
29	Hammer Ave/Cantu-Galleano Ranch Rd/Ontario Ranch Rd	Ontario, Eastvale	None	None	Add 2nd NBT Add NBR w/O.L. Add 2nd SBL Add 2nd SBT Add 2nd EBT Add 2nd WBL Add 2nd WBT WBR O.L. Add 3rd SBT Add 3rd EBT Add 3rd WBT Overlap EBR Add SBR w/OL	Same Same Same Same Same Same Same Same Same Same Same Same Same	No No Yes Yes Yes No No No Yes Yes No No No		\$267,120 \$102,025 \$74,200 \$267,120 \$267,120 \$74,200 \$267,120 \$27,825 \$267,120 \$267,120 \$267,120 \$27,825 \$102,025	6.07%	\$16,225 \$6,197 \$4,507 \$16,225 \$16,225 \$4,507 \$16,225 \$1,690 \$16,225 \$16,225 \$16,225 \$1,690 \$6,197	Yes
								<b>Total</b>	<b>\$2,277,940</b>		<b>\$138,362</b>	
30	I-15 SB Ramps/ Cantu-Galleano	Caltrans, Eastvale	None	None	Restripe No. 2 SBL to LR to provide SBL, SBLR, and SBR	Same	No		\$3,500	7.54%	\$264	No
31	I-15 NB Ramps/ Cantu-Galleano	Caltrans, Eastvale	None	None	Signal Timing Operational Improvements	Same	No		\$111,300	4.66%	\$5,185	Yes
33	Grove Ave/Eucalyptus Ave	Ontario	None	None	Signalize Intersection	Same	Yes	ST-024	\$350,000	65.27%	\$228,459	Yes
35	Euclid Ave/Merrill Ave	Caltrans, Chino, Ontario	None	None	Add 3rd NBT Add 2nd SBL Add 3rd SBT Add 2nd WBL Add WBR w/O.L.	Same Same Same Same Same	Yes No No Yes No	ST-30	\$267,120 \$74,200 \$267,120 \$74,200 \$185,500	11.86%	\$31,680 \$8,800 \$31,680 \$8,800 \$22,000	No
								<b>Total</b>	<b>\$868,500</b>		<b>\$102,961</b>	
34	Carpenter Ave/Eucalyptus Ave	Ontario	None	NBL <sup>2</sup> NBR <sup>2</sup> WBL <sup>2</sup> WBT <sup>2</sup>	Same Same Same Same	Same Same Same Same			- - - -		- - - -	Yes
36	Grove Avenue/Merrill Avenue <sup>3</sup>	Chino, Ontario	None	None	Add EBL Add 2nd EBT Add 2nd WBT Signalize intersection	Same Same Same Same	No No Yes Yes		\$74,200 \$267,120 \$267,120 \$350,000	14.94%	\$11,083 \$39,900 \$39,900 \$52,280	Yes
								<b>Total</b>	<b>\$958,440</b>		<b>\$143,162</b>	
37	Carpenter Ave/Merrill Ave <sup>4</sup>	Ontario, Chino	None	Signalize Intersection Add SBL <sup>2</sup> Add 2nd WBT <sup>2</sup> Add WBL <sup>2</sup>	Same Same Same Same	Same Same Same Same	No No Yes Yes		\$350,000 - - -	24.98%	\$87,437 - - -	Yes
								<b>Total</b>	<b>\$350,000</b>		<b>\$87,437</b>	

No.	Intersection Location	Jurisdiction	Existing (2017)	E+P (Project Buildout)	2023 With/Without Project	2040 Without/With Project	Improvements in City DIF?	DIF Project No.	Total Cost	Fair Share %	Fair Share Cost	Significant Impact?
38	Archibald Ave/Merrill Ave	Ontario	None	None	Add 2nd NBL Add 3rd NBT Add 3rd SBT Add SBR w/O.L. Add 2nd EBL <sup>1</sup> Add 2nd EBT <sup>1</sup> Add Free EBR <sup>1</sup> Add 2nd WBT	Same Same Same Same Same Same Same Same Add 2nd WBL Overlap NBR Add WBR	Yes Yes Yes No Yes Yes No Yes Yes No No		\$74,200 \$267,120 \$267,120 \$129,850 - - - - \$267,120 \$74,200 \$55,650 \$74,200	13.54%	\$10,047 \$36,170 \$36,170 \$17,583 - - - - \$36,170 \$10,047 \$7,535 \$10,047	No
								<b>Total</b>	<b>\$1,209,460</b>		<b>\$163,770</b>	
39	Archibald Ave/Limonite Ave	Eastvale	None	None	Add 2nd WBR Add 2nd NBT Add 2nd SBL Add 2nd SBT Add 2nd WB L Add 3rd NBT	Same Same Same Same Same Same	No No No No No No		\$74,200 \$267,120 \$74,200 \$267,120 \$267,120 \$267,120	10.90%	\$8,084 \$29,103 \$8,084 \$29,103 \$29,103 \$29,103	Yes
								<b>Total</b>	<b>\$1,216,880</b>		<b>\$132,579</b>	
40	Hamner Ave/Limonite Ave	Eastvale	None	None	NBR O.L. SBR O.L. Add 3rd WBT Add 3rd SBT EBR O.L. WBR O.L.	Same Same Same Same Same Same	No No No No No No		\$27,825 \$27,825 \$267,120 \$267,120 \$27,825 \$27,825	6.14%	\$1,709 \$1,709 \$16,404 \$16,404 \$1,709 \$1,709	Yes
								<b>Total</b>	<b>\$645,540</b>		<b>\$39,643</b>	
41	I-15 SB Ramps/Limonite Ave <sup>5</sup>	Caltrans, Eastvale	None	None	Add 3rd EBT Add 3rd WBT <b>Redesign Interchange to partial clover</b>	Same Same Same	No No No			4.64%	\$24,087	Yes
								<b>Total</b>	<b>\$519,000</b>			
42	I-15 NB Ramps/Limonite Ave <sup>5</sup>	Caltrans, Eastvale	None	None	Add 3rd EBT Add 3rd WBT <b>Redesign Interchange to partial clover</b>	Same Same Same	No No No			4.33%	\$22,447	Yes
								<b>Total</b>	<b>\$519,000</b>			
43	Euclid Ave/Kimball Ave	Caltrans, Chino	None	None	Add 3rd NBT Add 2nd SBL Add SBR w/O.L. Add 3rd SBT Add 2nd EBL Add EBR Add WBR w/O.L.	Same Same Same Same Same Same Same	Yes No No Yes No No No	ST-30 ST-30	\$267,120 \$74,200 \$129,850 \$267,120 \$74,200 \$74,200 \$129,850 \$74,200 \$74,200	7.02%	\$18,765 \$5,212 \$9,122 \$18,765 \$5,212 \$5,212 \$9,122 \$5,212 \$5,212	No
								<b>Total</b>	<b>\$1,164,940</b>		<b>\$81,835</b>	
44	Euclid Ave/Pine Ave	Caltrans, Chino	None	None	Add 3rd NBT Add 2nd NBR Add 3rd SBT	Same - Same	Yes - Yes	ST-30 ST-30	\$267,120 \$74,200 \$267,120	14.60%	\$39,000 \$10,833 \$39,000	No
45	Archibald Ave/Schleisman Rd	Eastvale	None	None	SBR O.L.	Same Overlap NBR	No No		\$55,650 \$55,650	11.47%	\$6,383 \$6,383	No
								<b>Total</b>	<b>\$111,300</b>		<b>\$12,766</b>	
46	Hellman Ave/Eucalyptus Ave	Ontario		Add EBT <sup>2</sup> Add WBL <sup>2</sup> Signalize Intersection Add NBL <sup>2</sup> Add NBR <sup>2</sup>	Same Same same Same same	Same Same Same Same Same	Yes Yes Yes No No		- - \$350,000 - -	35.70%	- - - -	Yes
								<b>Total</b>	<b>\$350,000</b>		<b>\$124,947</b>	
47	Hellman Ave/Merrill Ave	Ontario	None	Add EBL <sup>2</sup> Add WBT <sup>2</sup> Signalize Intersection Add SBL <sup>2</sup> Add SBR <sup>2</sup>	Same Same Same Same Same	Same Same Same Same Same	Yes Yes Yes No No		- - \$350,000 - -	20.15%	- - - -	Yes
								<b>Total</b>	<b>\$350,000</b>		<b>\$70,532</b>	
48	Archibald Ave/ Eucalyptus Ave	Ontario	None	None	Add NBL Add 3rd NBT Add 3rd SBT Add EBL Add EBT Add EBR Add 2nd NBL	Same Same Same Same Same Same Same	Yes No No Yes Yes Yes Yes		\$74,200 \$267,120 \$74,200 \$74,200 \$267,120 \$185,500 \$74,200	16.88%	\$12,523 \$45,082 \$12,523 \$12,523 \$45,082 \$31,307 \$12,523	Yes
								<b>Total</b>	<b>\$1,016,540</b>		<b>\$171,561</b>	
<b>Estimated Total Costs for Horizon Year (2040) Improvements</b>									<b>\$20,315,520</b>		<b>\$1,624,723</b>	
<b>Estimated Total Project Fair Share Contribution to the City of Ontario (non-DIF)</b>											<b>\$73,465</b>	
<b>Estimated Total Project Fair Share Contribution to the City of Chino</b>											<b>\$98,982</b>	
<b>Estimated Total Project Fair Share Contribution to the City of Eastvale</b>											<b>\$256,557</b>	
<b>Estimated Total Project Fair Share Contribution to the Caltrans</b>											<b>\$95,818</b>	

<sup>1</sup>Improvements to be constructed by Colony Commerce Center East Project as identified in Project Specific Plan Traffic Impact Analysis, November 2, 2017.

<sup>2</sup>Improvements to be constructed by the Project as part of site frontage/access improvements.

<sup>3</sup>Jurisdiction split 50/50 between Chino and Ontario

<sup>4</sup>Jurisdiction split 25/75 between Chino and Ontario

<sup>5</sup>Jurisdiction split 50/50 between Eastvale and Caltrans



**Table 1-2  
Project Fair Share Calculations**

Intersection		Existing	Project	2040 with Project Volume	Total New Traffic	Project % of New Traffic
4. Euclid Ave/SR-60 WB Ramps	AM	3215	57	4206	934	6.103%
	PM	3307	60	4392	1025	5.854%
5. Euclid Ave/SR-60 EB Ramps	AM	3093	92	4495	1310	7.023%
	PM	3158	81	4653	1414	5.728%
8. Archibald Ave/ SR-60 WB Ramps	AM	2509	203	3715	1003	20.239%
	PM	2569	93	3978	1316	7.067%
9. Archibald Ave/ SR-60 EB Ramps	AM	2636	245	4175	1294	18.934%
	PM	2929	191	4879	1759	10.858%
13. Euclid Ave/Riverside Dr	AM	3012	67	4813	1734	3.864%
	PM	3423	81	5541	2037	3.976%
15. Archibald Ave/Riverside Dr	AM	2619	266	3668	783	33.972%
	PM	3680	212	4515	623	34.029%
16. Euclid Ave/Chino Ave	AM	2374	98	4689	2315	4.233%
	PM	2705	81	5203	2498	3.243%
17. Grove Ave/Chino Ave	AM	758	252	1928	1170	21.538%
	PM	947	118	2103	1156	10.208%
18. Archibald Ave/Chino Ave	AM	1538	269	4079	2272	11.840%
	PM	1773	221	4811	2817	7.845%
22. SR-71 SB Ramps/Grand Ave	AM	3131	145	3475	344	42.151%
	PM	4666	299	5160	494	60.526%
26. Euclid Ave/Edison Ave	AM	2608	301	5112	2203	13.663%
	PM	3081	415	6119	2623	15.822%
27. Grove Ave/Edison Ave	AM	1092	341	2205	1113	30.638%
	PM	1208	248	2504	1296	19.136%
28. Archibald Ave/Edison Ave	AM	2448	498	6482	4034	12.345%
	PM	2613	404	7434	4821	8.380%
29. Hamner Ave/Cantu-Galleano Ranch Rd/Ontario Ranch Rd	AM	2129	228	5883	3754	6.074%
	PM	2370	183	8070	5700	3.211%
30. I-15 SB Ramps/ Cantu-Galleano Ranch Rd/Ontario Ranch Rd	AM	1721	228	4973	3024	7.540%
	PM	2000	183	5848	3665	4.993%
31. I-15 NB Ramp/Cantu-Galleano Ranch Rd	AM	1580	61	3433	1853	3.292%
	PM	1539	134	4415	2876	4.659%
33. Grove Ave /Eucalyptus Ave	AM	448	453	1142	694	65.274%
	PM	475	245	1184	709	34.556%
34. Carpenter Ave/Eucalyptus Ave	AM	31	488	648	617	79.092%
	PM	20	449	630	610	73.607%
35. Euclid Ave/Merrill Ave	AM	2315	207	4863	2548	8.124%
	PM	2575	245	5265	2690	9.108%
36. Grove Avenue/Merrill Avenue	AM	882	272	2703	1821	14.937%
	PM	872	290	2877	2005	14.464%
37. Carpenter Ave/Merrill Ave	AM	743	347	2132	1389	24.982%
	PM	780	358	2271	1491	24.011%
38. Archibald Ave/Merrill Ave	AM	2427	444	6150	3279	13.541%
	PM	2369	419	6891	4103	10.212%
39. Archibald Ave/Limonite Ave	AM	2395	313	5268	2873	10.895%
	PM	2494	304	5770	3276	9.280%
40. Hamner Ave/Limonite Ave	AM	3405	221	7004	3599	6.141%
	PM	3908	218	8092	4184	5.210%
41. I-15 SB Ramps/Limonite Ave	AM	3152	157	13346	10194	1.540%
	PM	3447	159	6873	3426	4.641%
42. I-15 NB Ramps/Limonite Ave	AM	2872	121	5670	2798	4.325%
	PM	3361	65	7174	3813	1.705%
43. Euclid Ave/Kimball Ave	AM	2837	103	4500	1560	6.603%
	PM	3310	119	5123	1694	7.025%
44 Euclid Ave/Pine Ave	AM	2899	107	4101	1095	9.772%
	PM	3223	119	4157	815	14.601%
45. Archibald Ave/Schleisman Rd	AM	3987	92	4881	802	11.471%
	PM	3758	86	5284	1440	5.972%
46. Hellman Ave/Eucalyptus Ave	AM	0	659	1846	1846	35.699%
	PM	0	496	2168	2168	22.878%
47. Hellman Ave/Merrill Ave	AM	0	398	1975	1975	20.152%
	PM	0	396	2090	2090	18.947%
48. Archibald Ave/Eucalyptus Ave	AM	1884	628	5605	3721	16.877%
	PM	1961	526	6096	4135	12.721%



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**SECTION 2.0** EXISTING STUDY AREA CONDITIONS

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## 2.1 PROJECT STUDY AREA

The project study area and intersections are shown on Figure 2-1A together with the number of through lanes on roadways. Existing intersection geometrics and controls are shown on Figures 2-1B and 2-1C. The Project site and most adjacent areas are currently undeveloped and have formerly been used for agricultural and dairy uses. A half mile to the southeast of the site there is residential development and a warehouse development to the southwest. Two miles southwest of the site is the Chino Airport and air museums.

Existing roadways in vicinity of the project include Merrill Avenue, Carpenter Avenue, Eucalyptus Avenue, Grove Avenue, and Archibald Avenue. State Route 60 is located approximately 2.5 miles north of the site and Interstate 15 is located approximately 2.5 miles east.

Figure 2-1A shows the following forty-eight (48) off-site intersections included in this study for analysis:

### Signalized Intersections

1. Euclid Avenue/Philadelphia Street
2. Grove Avenue/Philadelphia Street
3. Archibald Avenue /Philadelphia Street
4. Euclid Avenue/SR-60 Westbound Ramps
5. Euclid Avenue/SR-60 Eastbound Ramps
6. Grove Avenue/SR-60 Westbound Ramps
7. Grove Avenue/SR-60 Eastbound Ramps
8. Archibald Avenue/SR-60 Westbound Ramps
9. Archibald Avenue/SR-60 Eastbound Ramps
10. Euclid Avenue/Walnut Street

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11. Grove Avenue/Walnut Street
12. Archibald Avenue/Walnut Street
13. Euclid Avenue/Riverside Drive
14. Grove Avenue/Riverside Drive
15. Archibald Avenue/Riverside Drive
16. Euclid Avenue/Chino Avenue
18. Archibald Avenue/Chino Avenue
19. Euclid Avenue/Schaefer Avenue
21. SR-71 SB Ramps/Grand Avenue
22. SR-71 NB Ramps/Grand Avenue
23. Ramona Avenue/Edison Avenue
24. Central Avenue/Edison Avenue
25. Mountain Avenue/Edison Avenue
26. Euclid Avenue/Edison Avenue
28. Archibald Avenue/Edison Avenue
29. Hamner Avenue/Cantu-Galleano Ranch Road/Ontario Ranch Road
30. I-15 SB Ramps/ Cantu-Galleano Ranch Road/Ontario Ranch Road
31. I-15 NB Ramps/ Cantu-Galleano Ranch Road/Ontario Ranch Road
32. Euclid Avenue/Eucalyptus Avenue
35. Euclid Avenue/Merrill Avenue
38. Archibald Avenue/Merrill Avenue
39. Archibald Avenue/Limonite Avenue
40. Hamner Avenue/Limonite Avenue
41. I-15 SB Ramps/Limonite Avenue
42. I-15 NB Ramps/Limonite Avenue
43. Euclid Avenue/Kimball Avenue
44. Euclid Avenue/Pine Avenue
45. Archibald Avenue/Schleisman Road
48. Archibald Avenue and Eucalyptus Avenue

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### Unsignalized Intersections

- 17. Grove Avenue/Chino Avenue
- 20. Grove Avenue/Schaefer Avenue
- 27. Grove Avenue/Edison Avenue
- 33. Grove Avenue/Eucalyptus Avenue
- 34. Carpenter Avenue/Eucalyptus Avenue
- 36. Grove Avenue/Merrill Avenue
- 37. Carpenter Avenue/Merrill Avenue
- 46. Hellman Avenue and Eucalyptus Avenue
- 47. Hellman Avenue and Merrill Avenue

#### 2.1.1. Existing Traffic Volumes

Figure 2-2A provides existing am and pm peak hour two-way roadway link volumes on study area roadway segments. Figures 2-2B through 2-2E show existing weekday am and pm peak hour intersection turning movement volumes at study area intersections. Figure 2-3 shows existing weekday 24-hour volumes on roadway segments and volume-to-capacity (v/c) ratios. Traffic Data was collected in March 2017 for this study by National Data Collection and Surveying Services (NDS) and is included in the appendix. Schools were in session when this data was collected.

#### 2.1.2. Opening Year 2023 No Project Volumes

For this study, the Project has been analyzed for completion in year 2023. Opening year traffic volumes have been developed by adding traffic from identified future cumulative development projects. Twenty-five (25) cumulative development projects in addition to West Ontario Commerce Center were identified by the City of Ontario for this study and are shown on Figure 2-4. Figure 2-4 identifies the analysis scenario year in this study by which each cumulative project is anticipated to have been implemented and in which its traffic was added to existing traffic volumes.

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These projects include the Watson Industrial Park which is located diagonally adjacent to the project site on the southwest. At completion, this project will develop 3.872 million square feet of light industrial use. The Watson Industrial Park is a phased project scheduled for completion by 2019. The volumes assigned to each affected study area intersection are as identified in the Watson Industrial Park FEIR, dated November 18, 2015.

Figure 2-5A provides Opening Year 2023 No Project am and pm peak hour two-way roadway link volumes on study area roadway segments. Figures 2-5B through 2-5E show Opening Year 2023 No Project weekday am and pm peak hour intersection turning movement volumes at study area intersections. Figure 2-6 shows Opening Year 2023 No Project weekday 24-hour volumes on roadway segments and volume-to-capacity (v/c) ratios.

### 2.1.3. Horizon Year 2040 No Project Volumes

Figure 2-7A provides Horizon Year 2040 No Project am and pm peak hour two-way roadway link volumes on study area roadway segments. Figures 2-7B through 2-7E show Horizon 2040 Year No Project weekday am and pm peak hour intersection turning movement volumes at study area intersections. Figure 2-8 shows Horizon Year 2040 No Project weekday 24-hour volumes on roadway segments and volume-to-capacity (v/c) ratios.

### 2.1.4. Existing and Opening Year 2023 Level of Service (LOS) Analysis

To provide a detailed analysis of existing peak hour and Project year 2023 traffic conditions within the study area, the 2010 Highway Capacity Manual (HCM) Signalized Method was used to analyze existing signalized study area intersections. Using this method, the average control delay in seconds per vehicle is calculated for each intersection considering unique features including turning movement volumes, traffic signal phasing and timing, and the number and types of lanes on each approach.

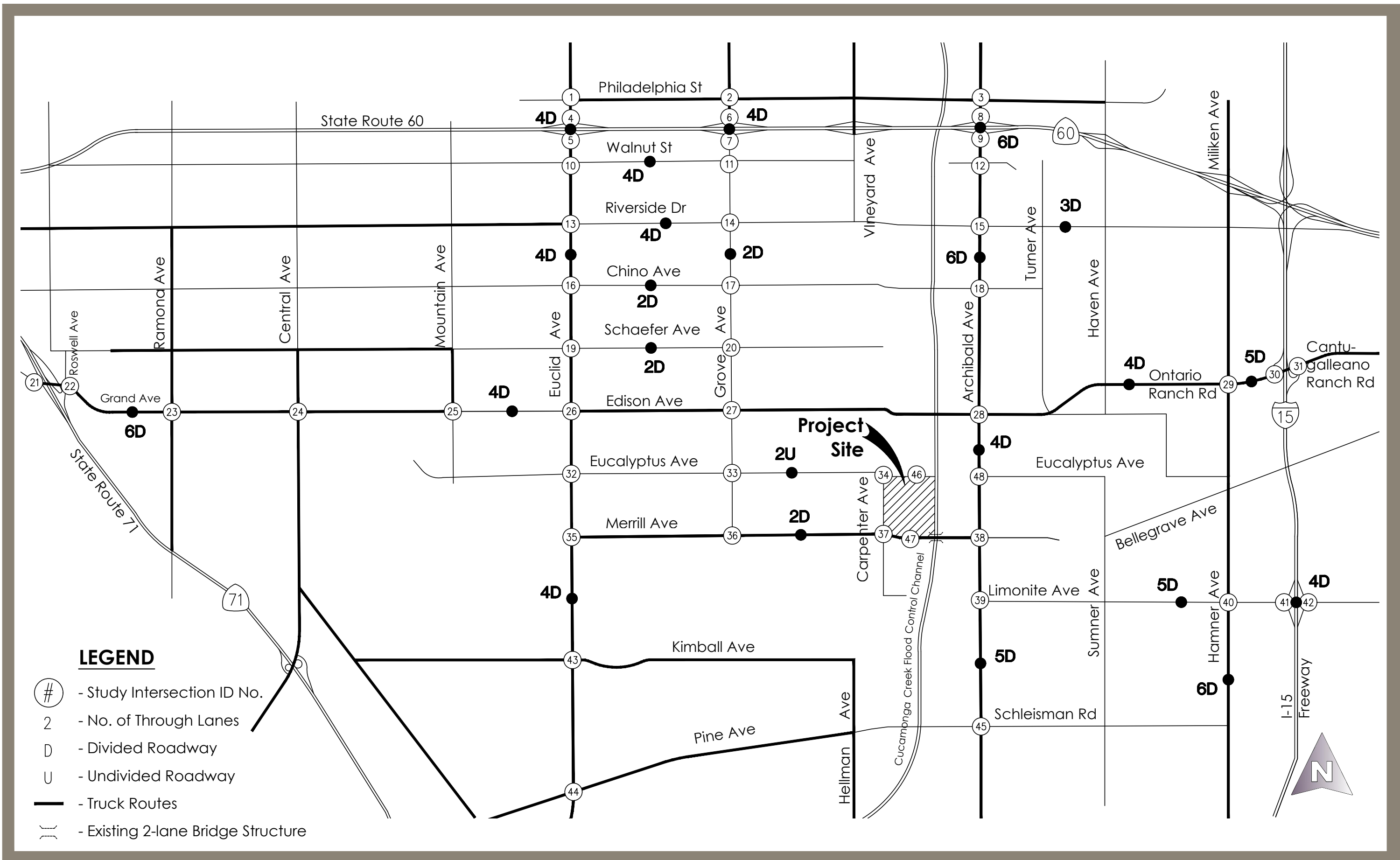
*March 2018*

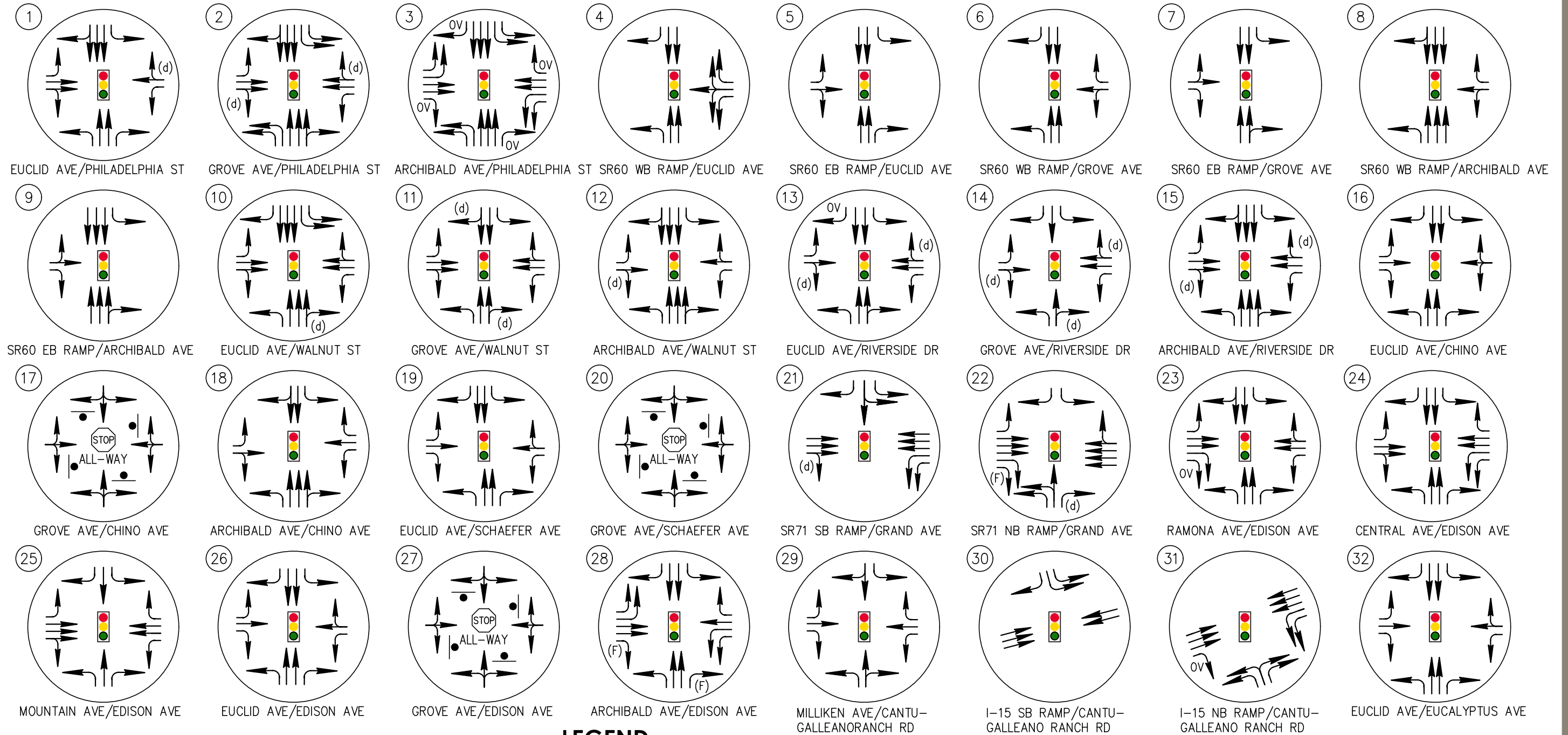
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The average control delay per vehicle is used to determine level of service at signalized intersections as shown on Table 2-1A.

Using the 2010 HCM operations method for unsignalized intersections, level of service is based on worst case approach delay as shown on Table 2-1B.

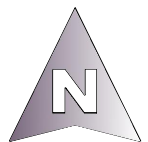
Table 2-2 shows the results of intersection level of service analysis for the study area intersections, separated by signalized/unsignalized control, under existing 2017 conditions and Table 2-3 for Opening Year 2023 conditions.

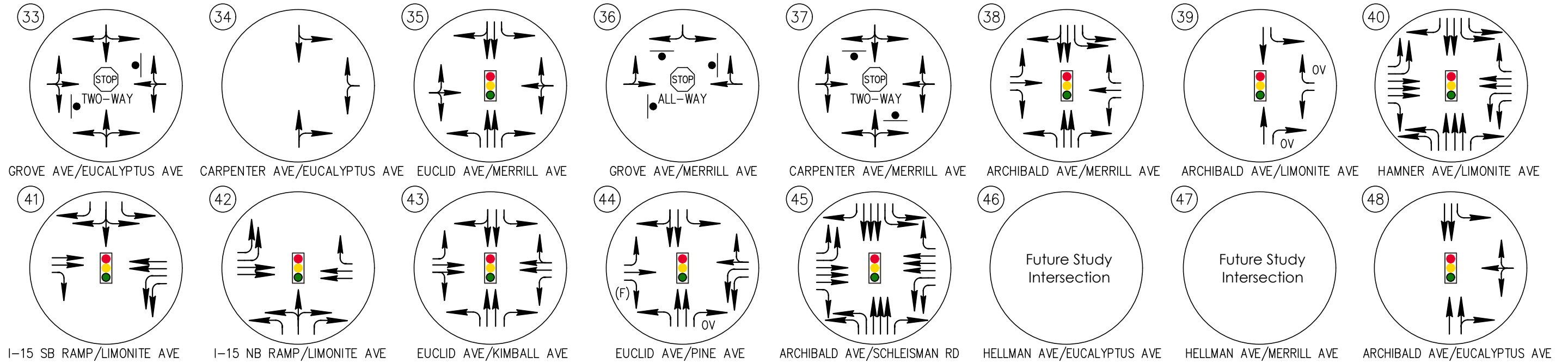




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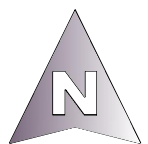
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- (d) - De Facto Right-Turn
- (F) - Free Right-Turn
- OV - Overlap Right-Turn Signal Phase
- STOP - Stop-Controlled Intersection
- 🚦 - Signalized Intersection





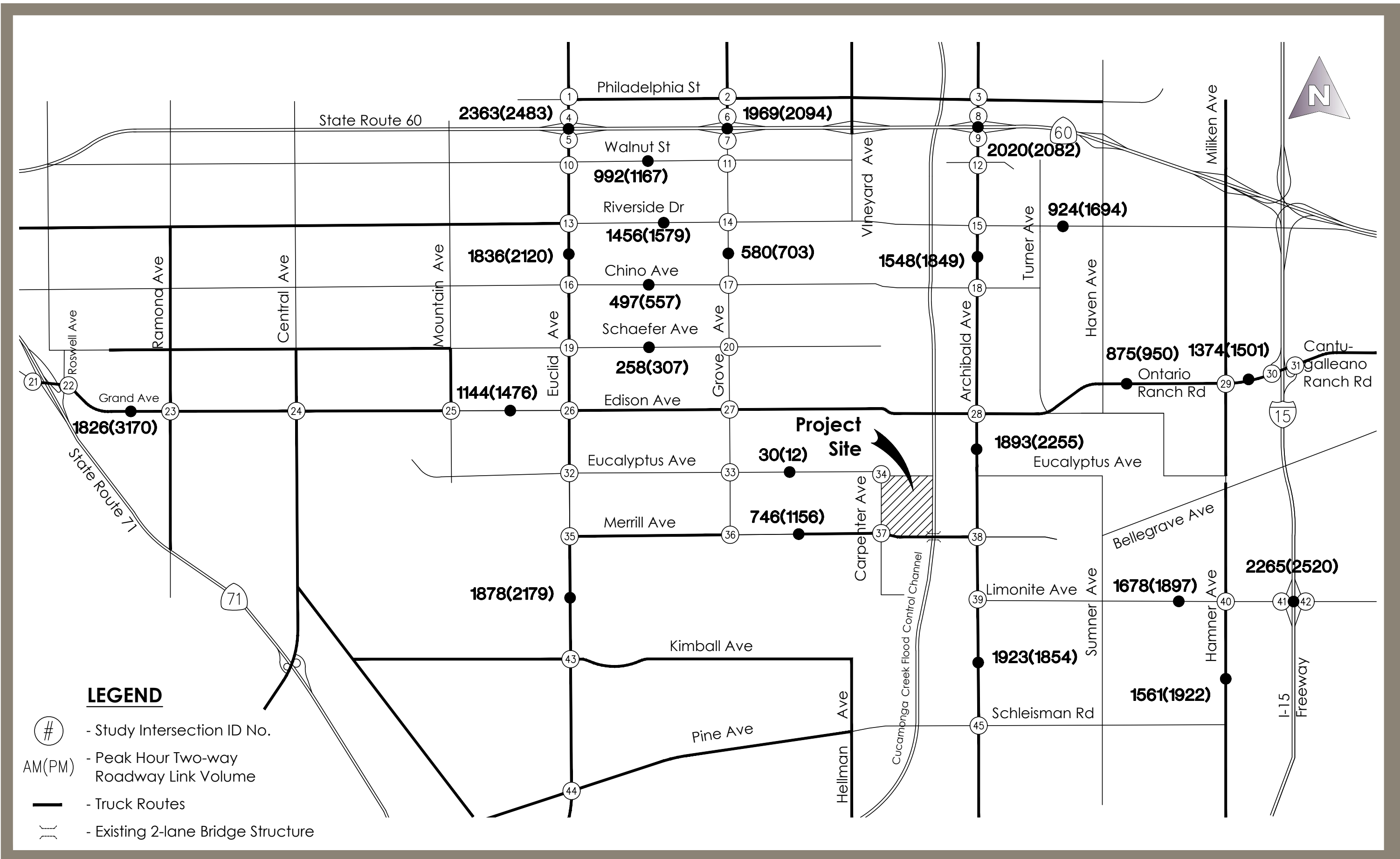
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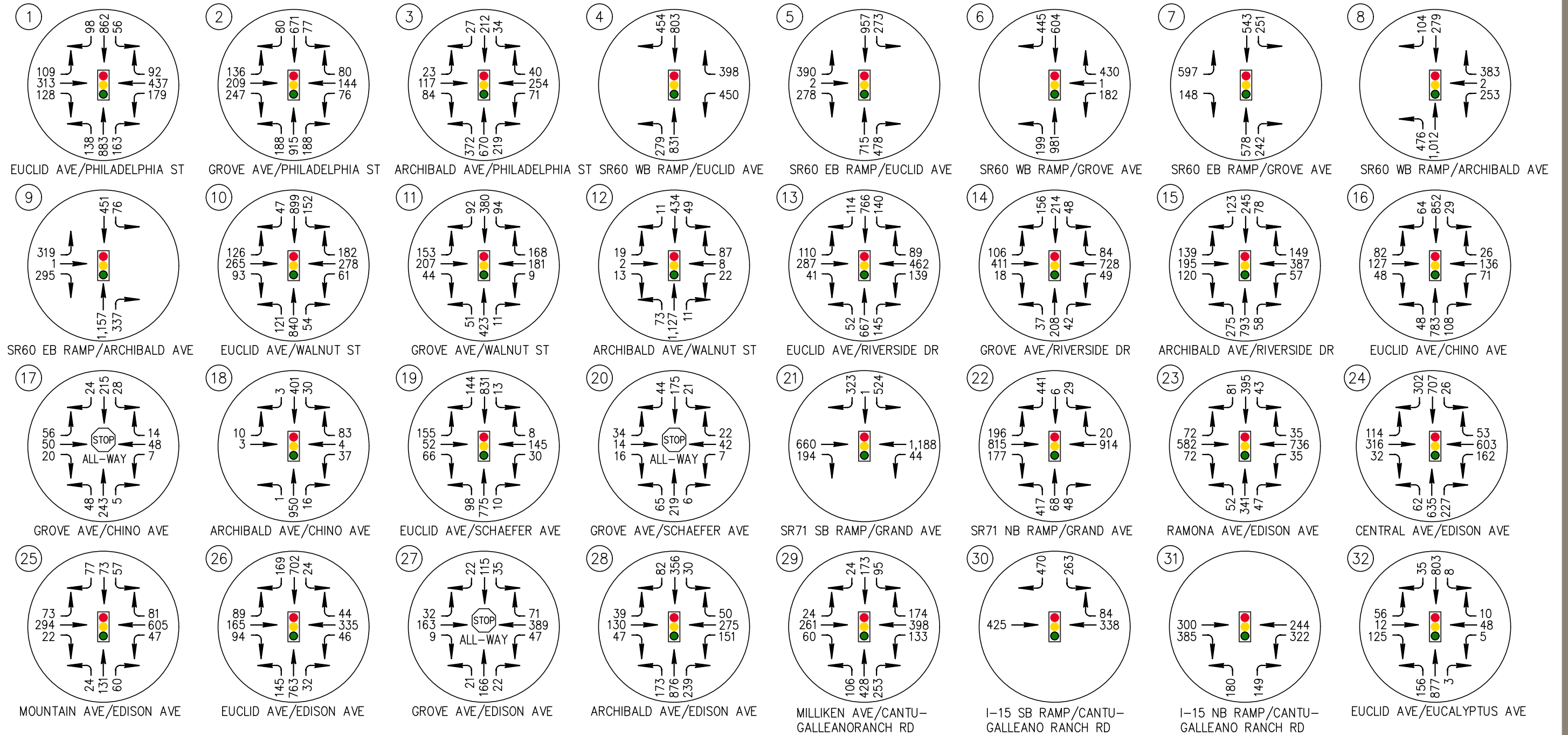
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- (d) - De Facto Right-Turn
- (F) - Free Right-Turn
- OV - Overlap Right-Turn Signal Phase
- STOP - Stop-Controlled Intersection
- - Signalized Intersection



v:\2073\active\2073013140\drawing\exhibit\_files\2-1c - existing geometrics intersections 33-45.dwg

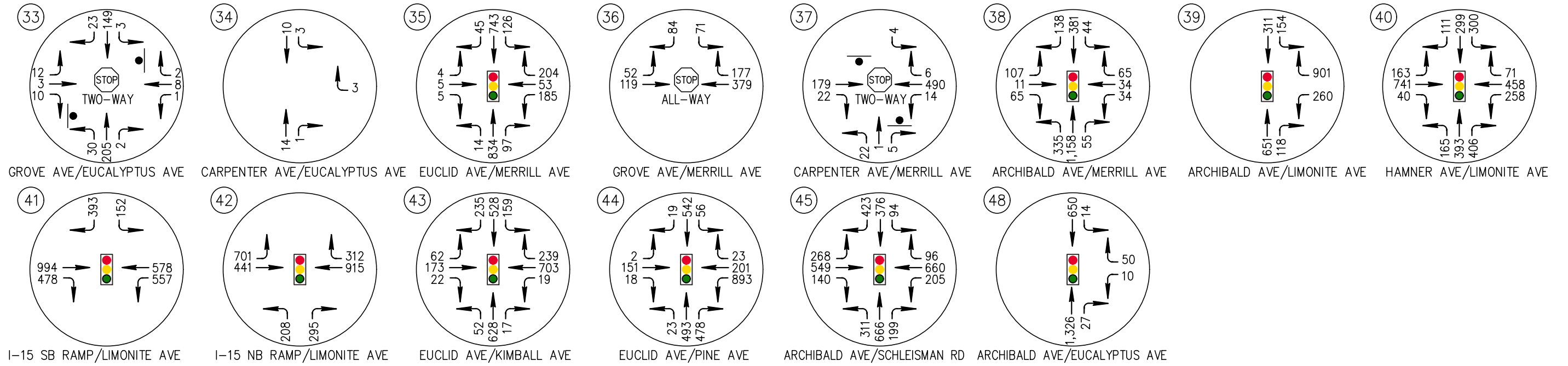






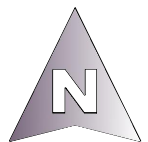
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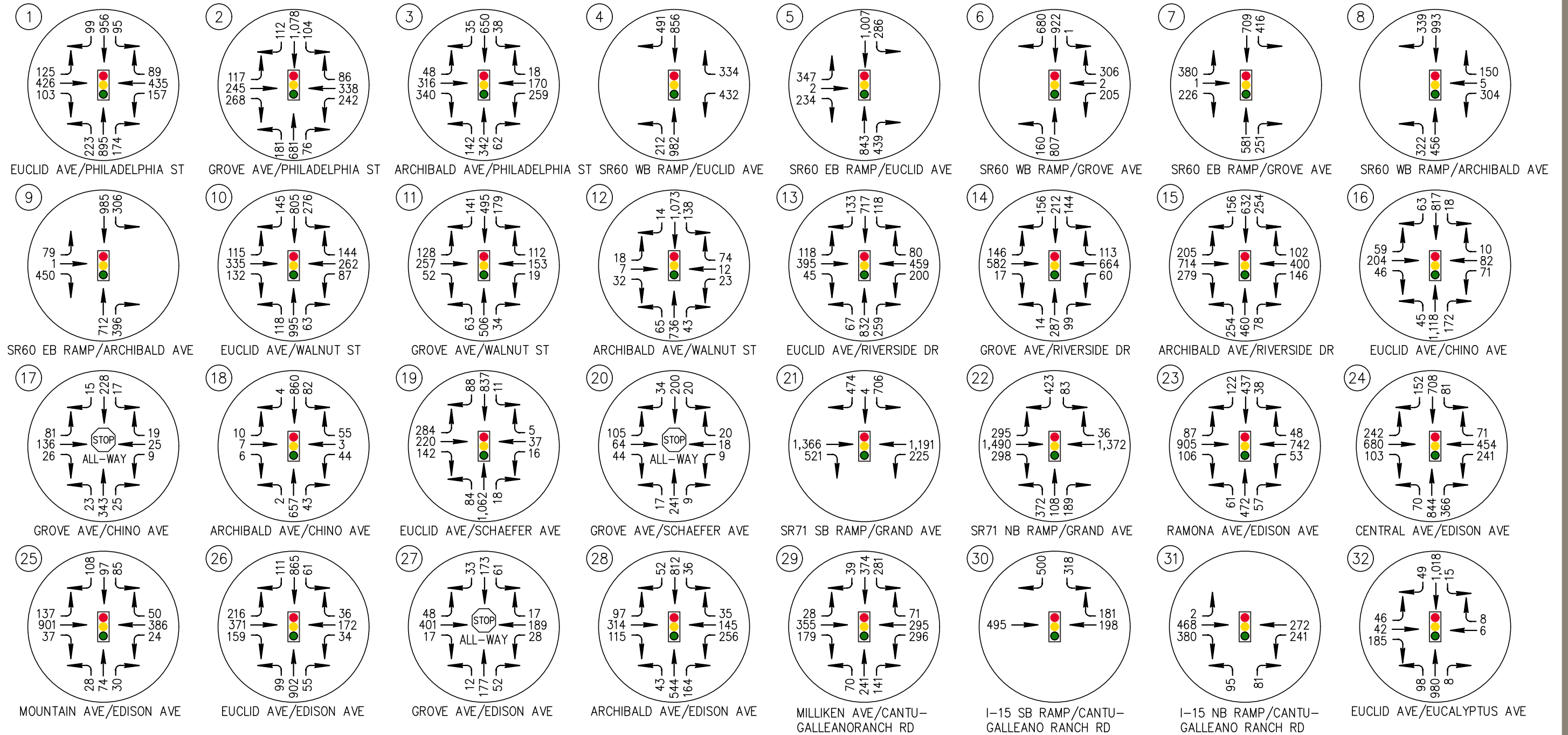
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- Signalized Intersection
- 338 - Peak Hour Volume for Movement Indicated



**LEGEND**

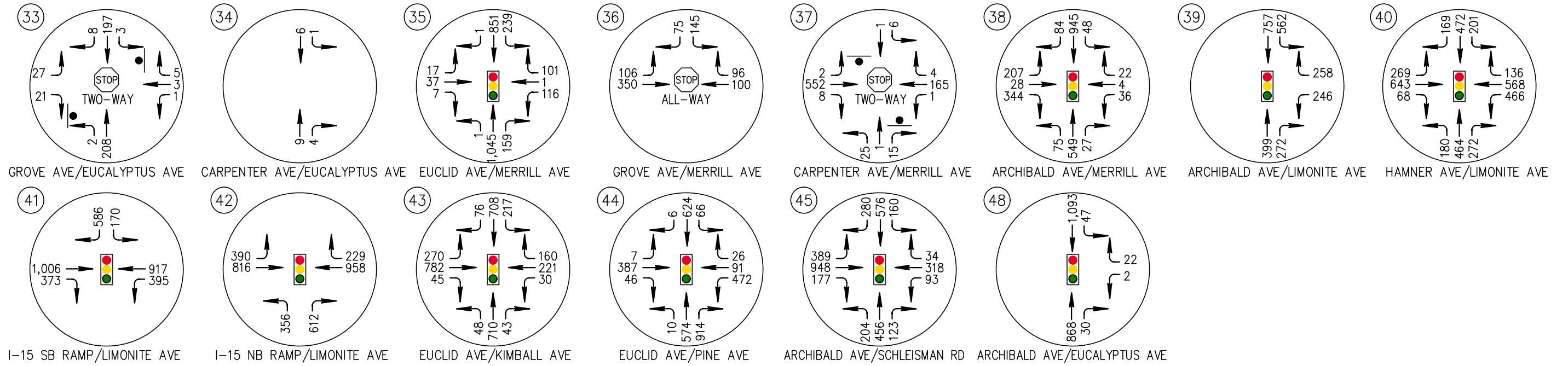
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- Signalized Intersection
- 660 - Peak Hour Volume for Movement Indicated





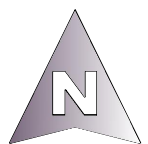
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- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- TL - Signalized Intersection
- 295 - Peak Hour Volume for Movement Indicated

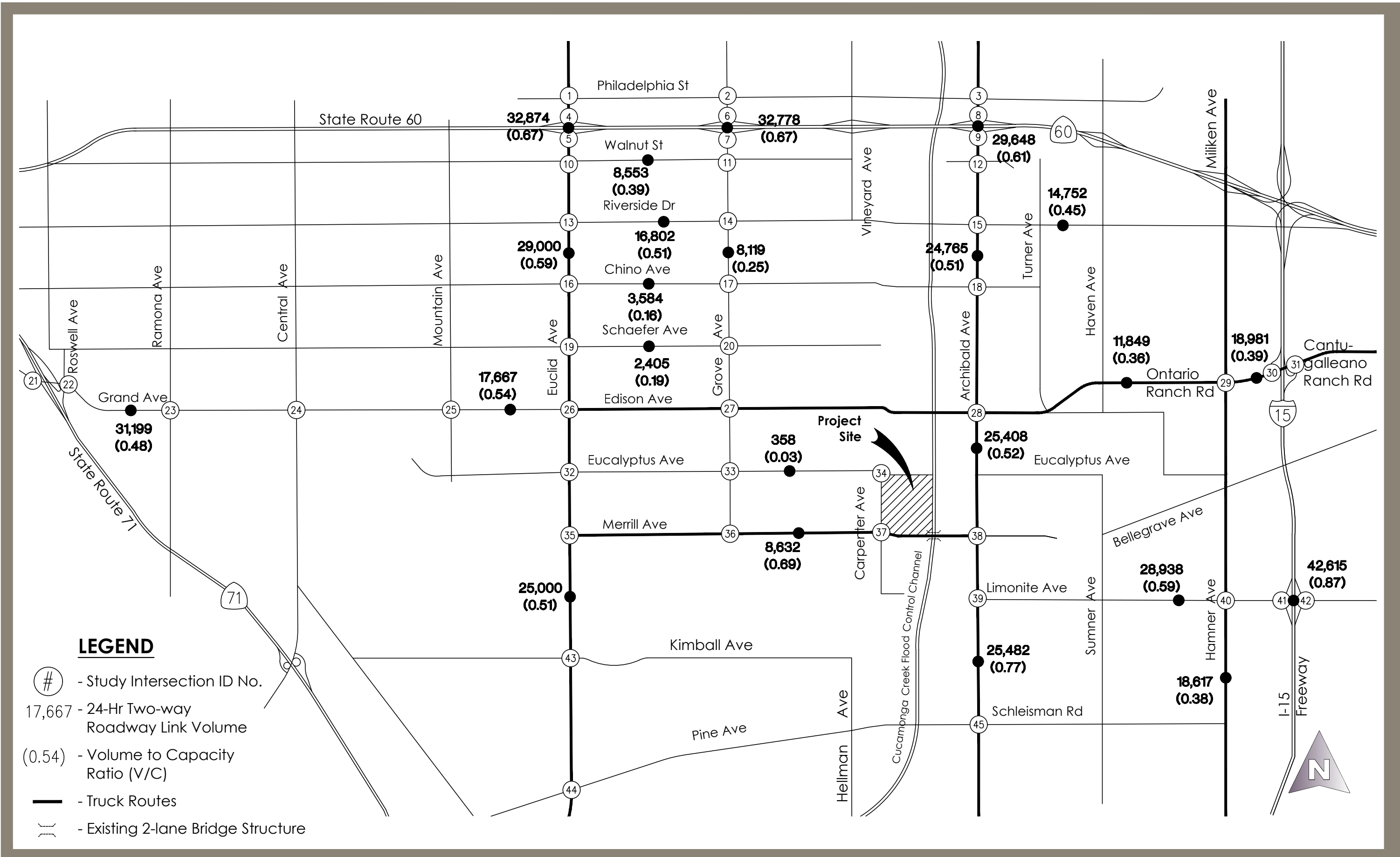


**LEGEND**

- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- Signalized Intersection Symbol - Signalized Intersection
- 318 - Peak Hour Volume for Movement Indicated

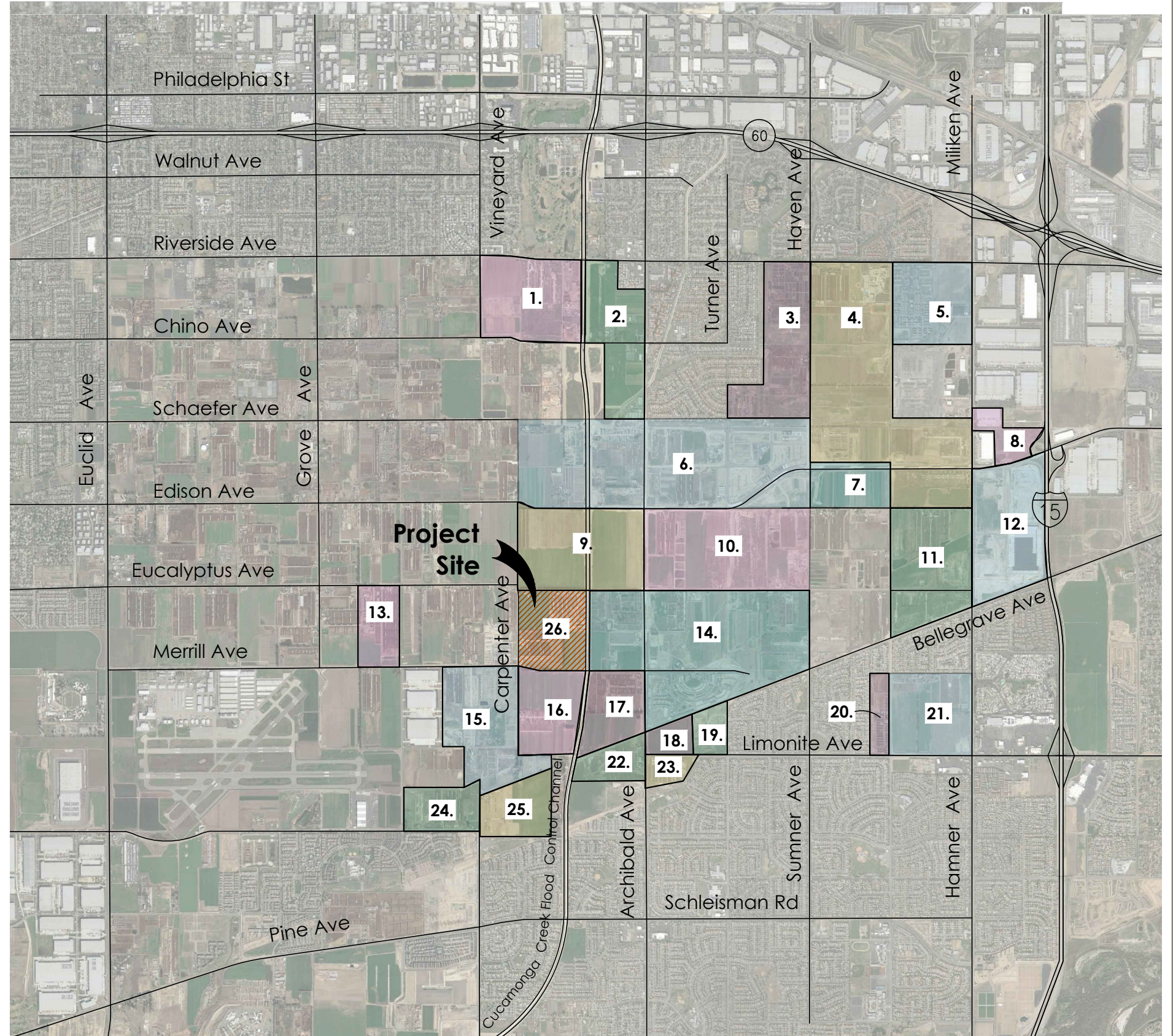




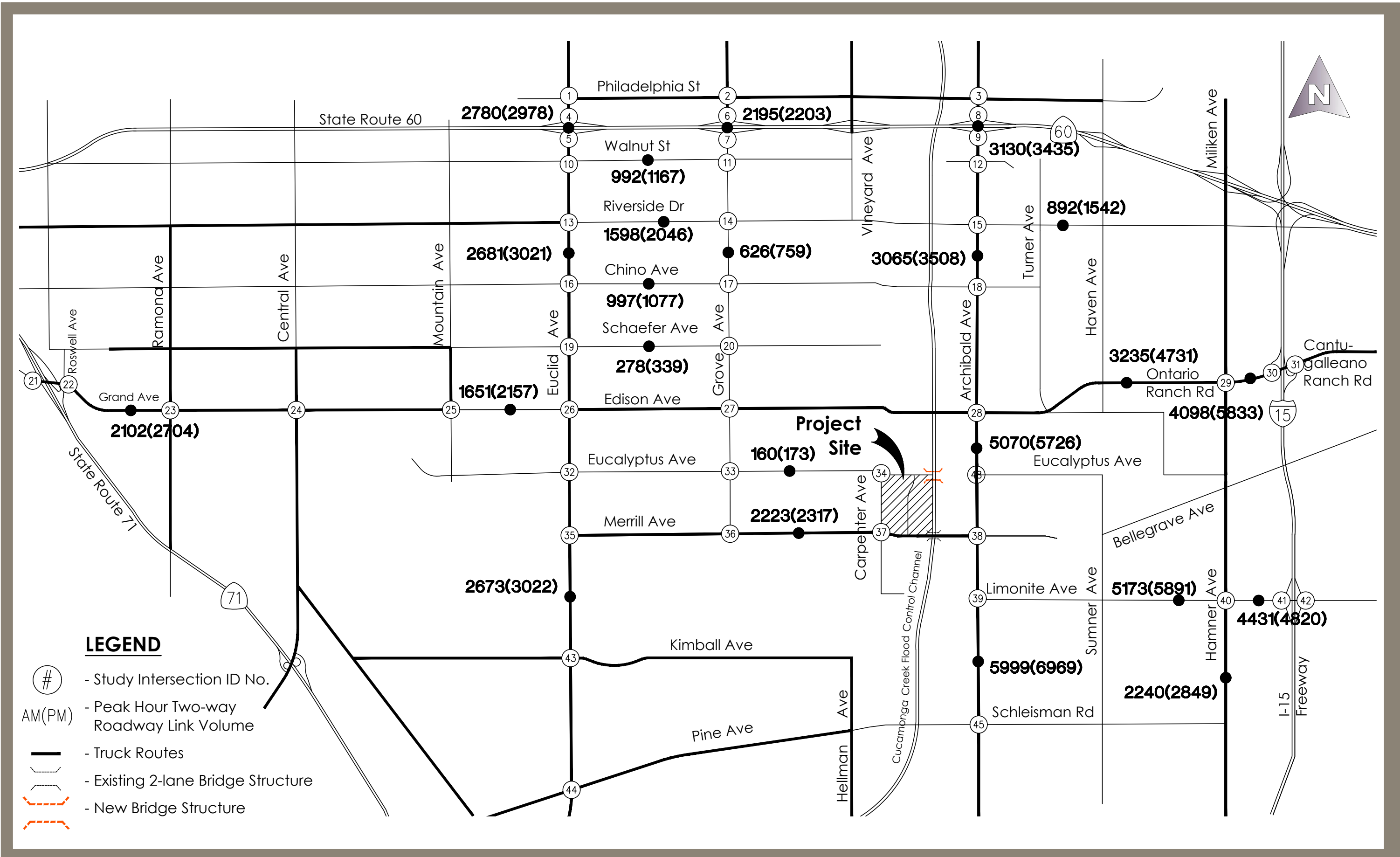




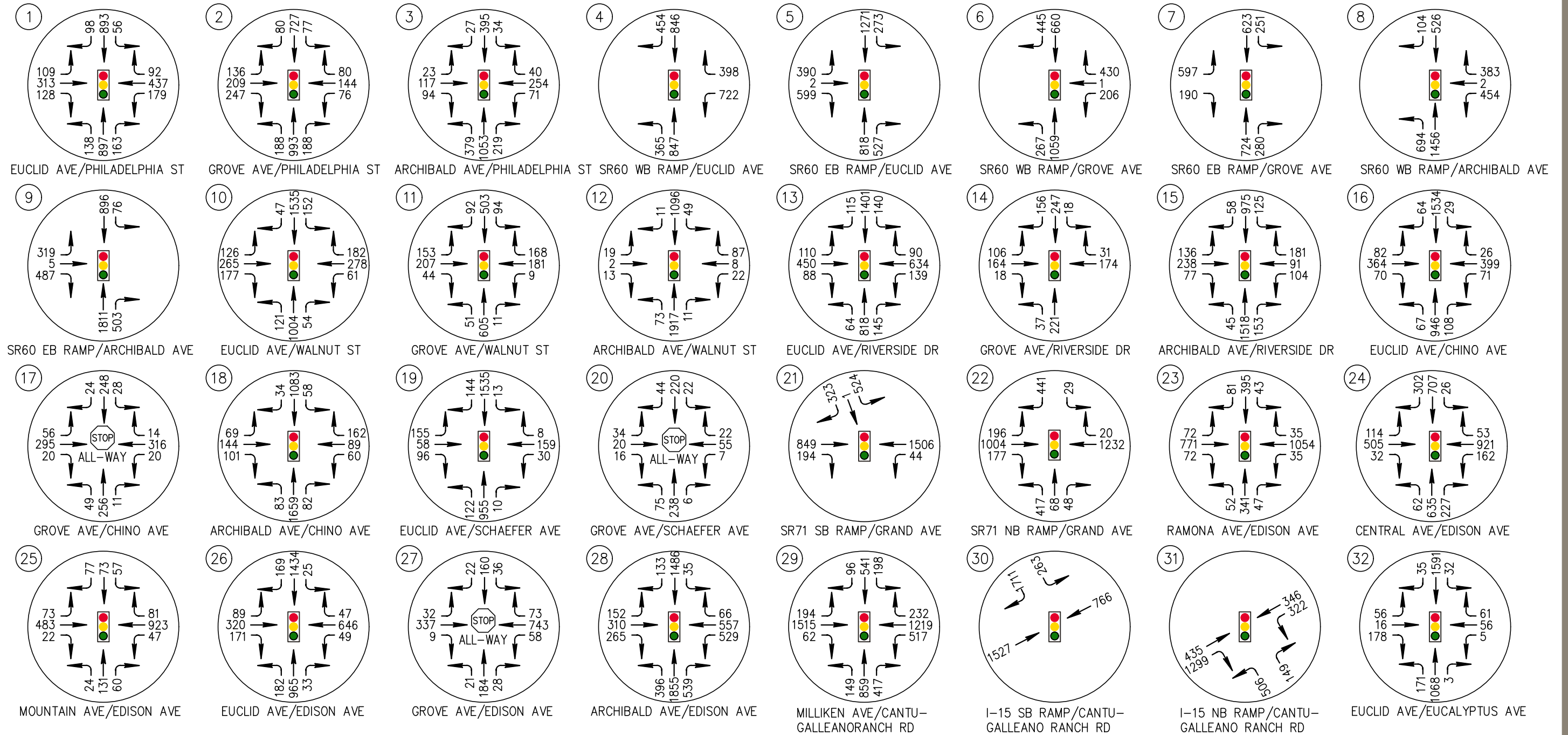
	Cumulative Developments	Study Analysis Year
1.	Armstrong Ranch	2023
2.	Countryside	2023
3.	West Haven	2023
4.	Rich-Haven	2023
5.	Edenglen	2023
6.	The Avenue	2023
7.	Rich-Haven SPA	2023
8.	Eastvale Industrial	2023
9.	Parkside	2023
10.	Grand Park	2023
11.	Esperanza	2023
12.	Eastvale Commerce Center	2023
13.	Chino Parcel Delivery	2023
14.	Subarea 29	2023
15.	Watson Industrial	2023
16.	Colony Commerce Center	2023/40
17.	Colony Commerce Center - East	2023/40
18.	Dairy Property	2023
19.	SC Limonite	2023
20.	TR32821	2023
21.	Eastvale Leal	2040
22.	The Campus/Providence	2023
23.	Eastvale Crossings	2023/40
24.	Kimball Business Park	2023
25.	The Ranch at Eastvale	2023
26.	West Ontario Commerce Center	2023











**LEGEND**

- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 1515 - Peak Hour Volume for Movement Indicated
- Signalized Intersection

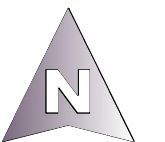
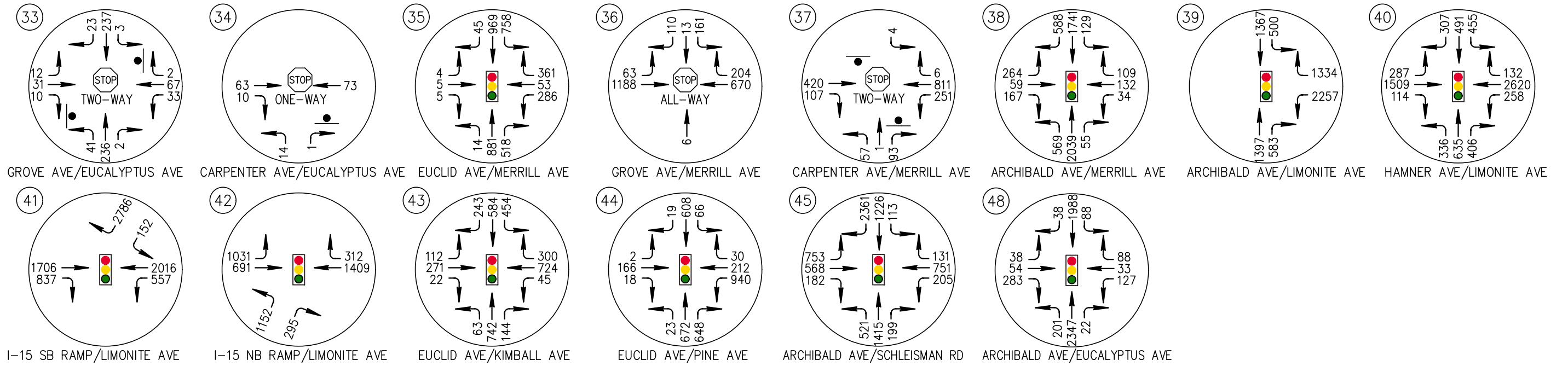
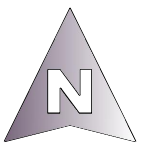


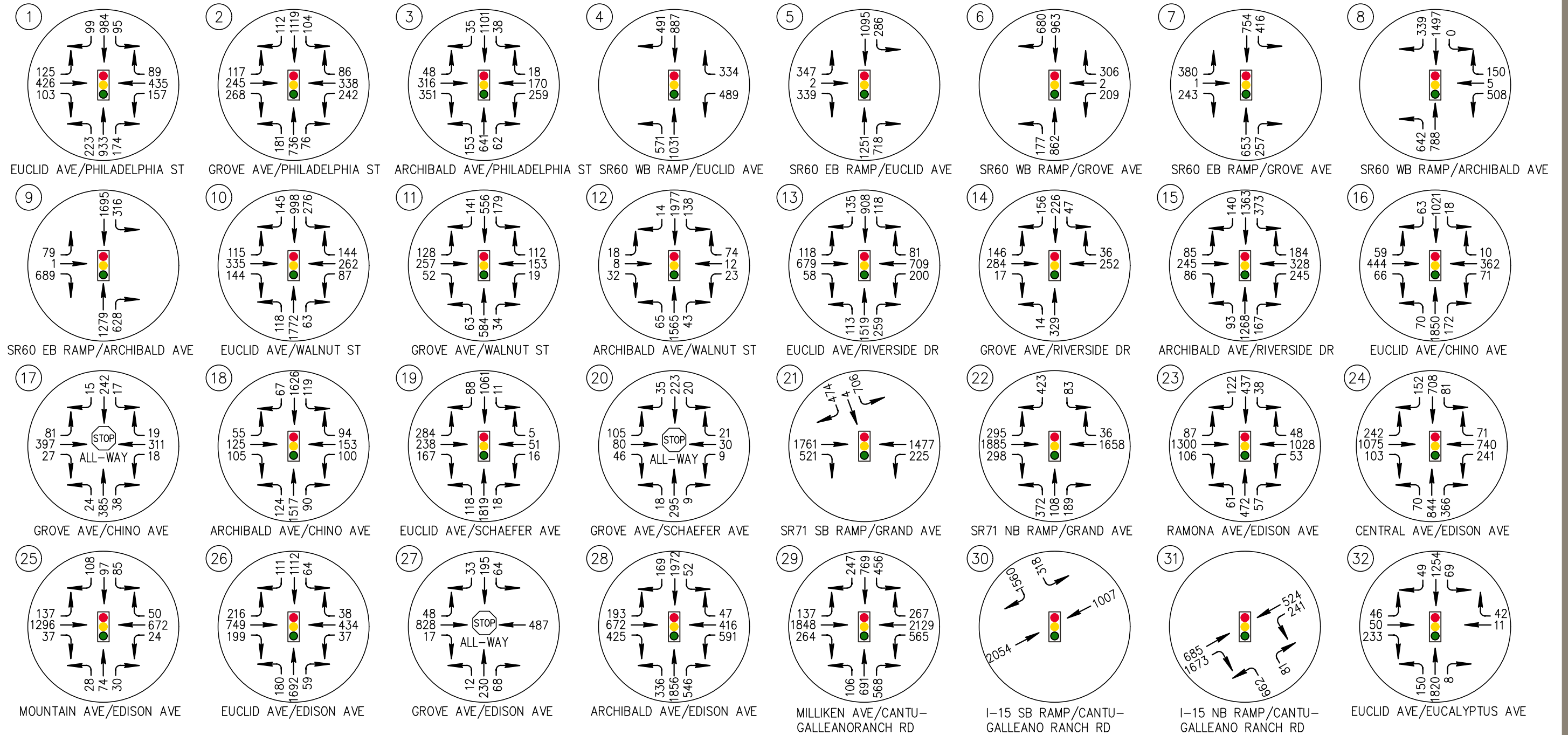
Figure 2-5B



**LEGEND**

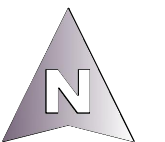
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- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- Signalized Intersection
- 375 - Peak Hour Volume for Movement Indicated

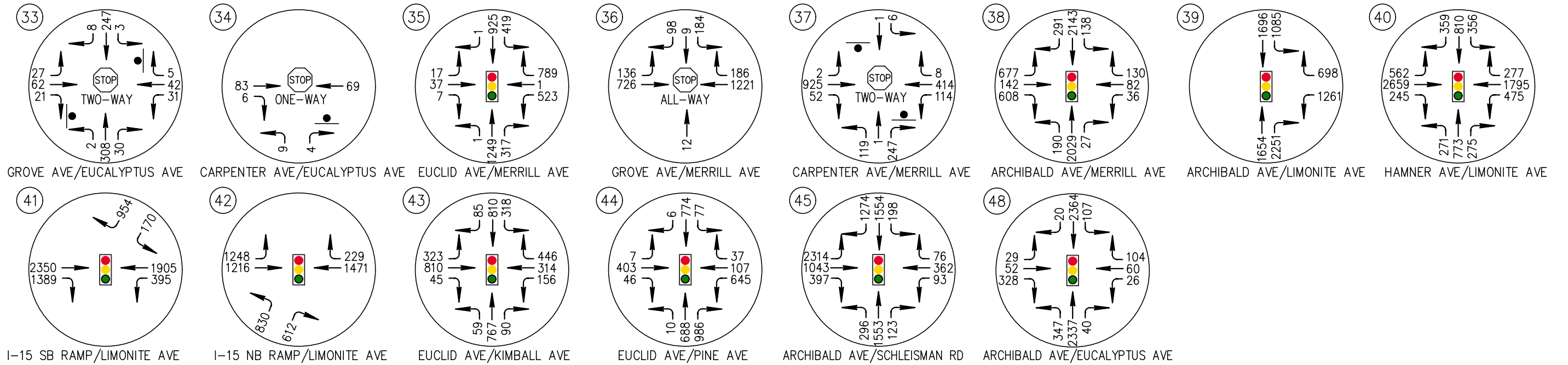




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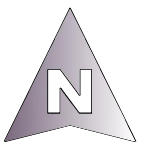
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- Signalized Intersection
- 2054 - Peak Hour Volume for Movement Indicated

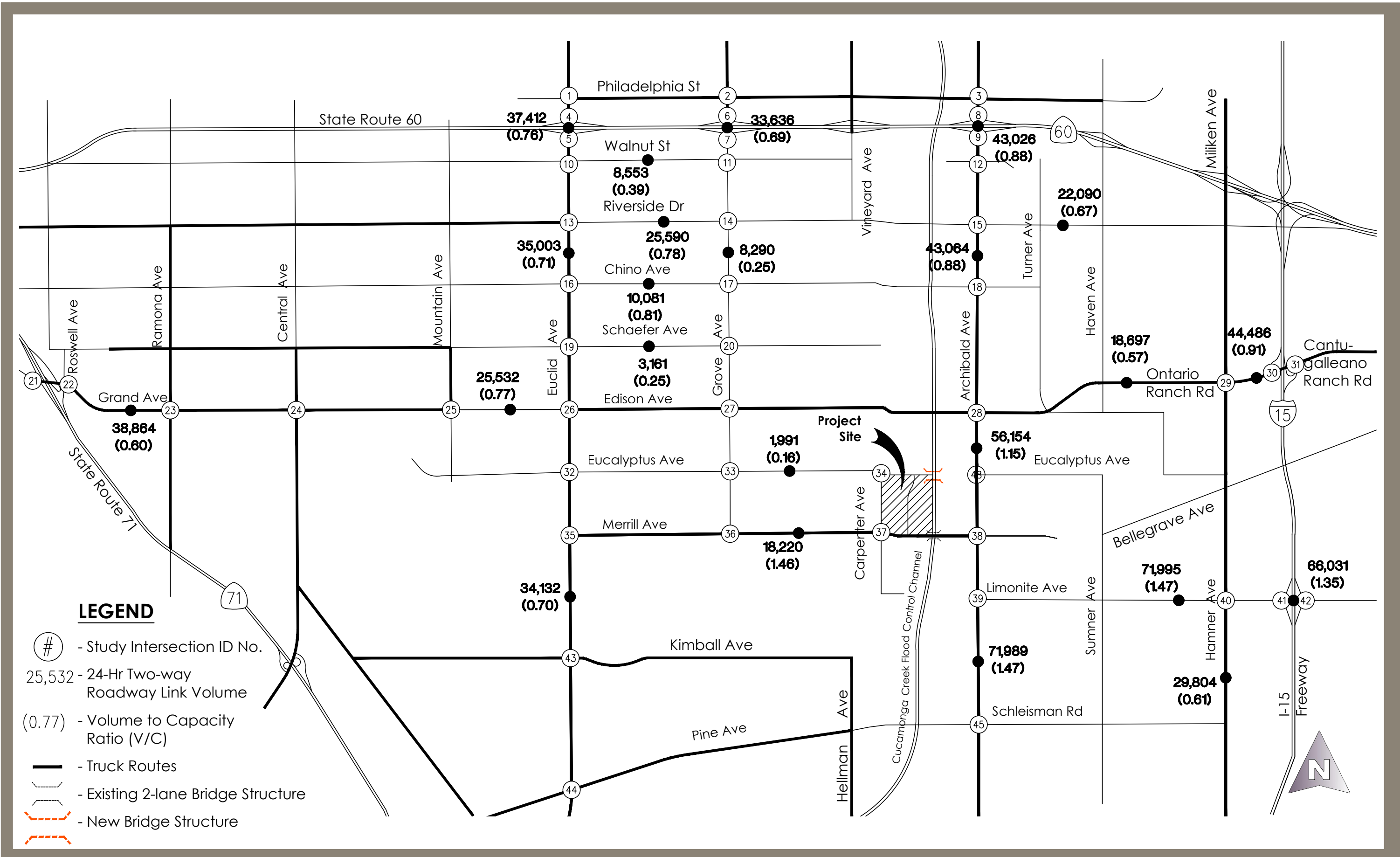




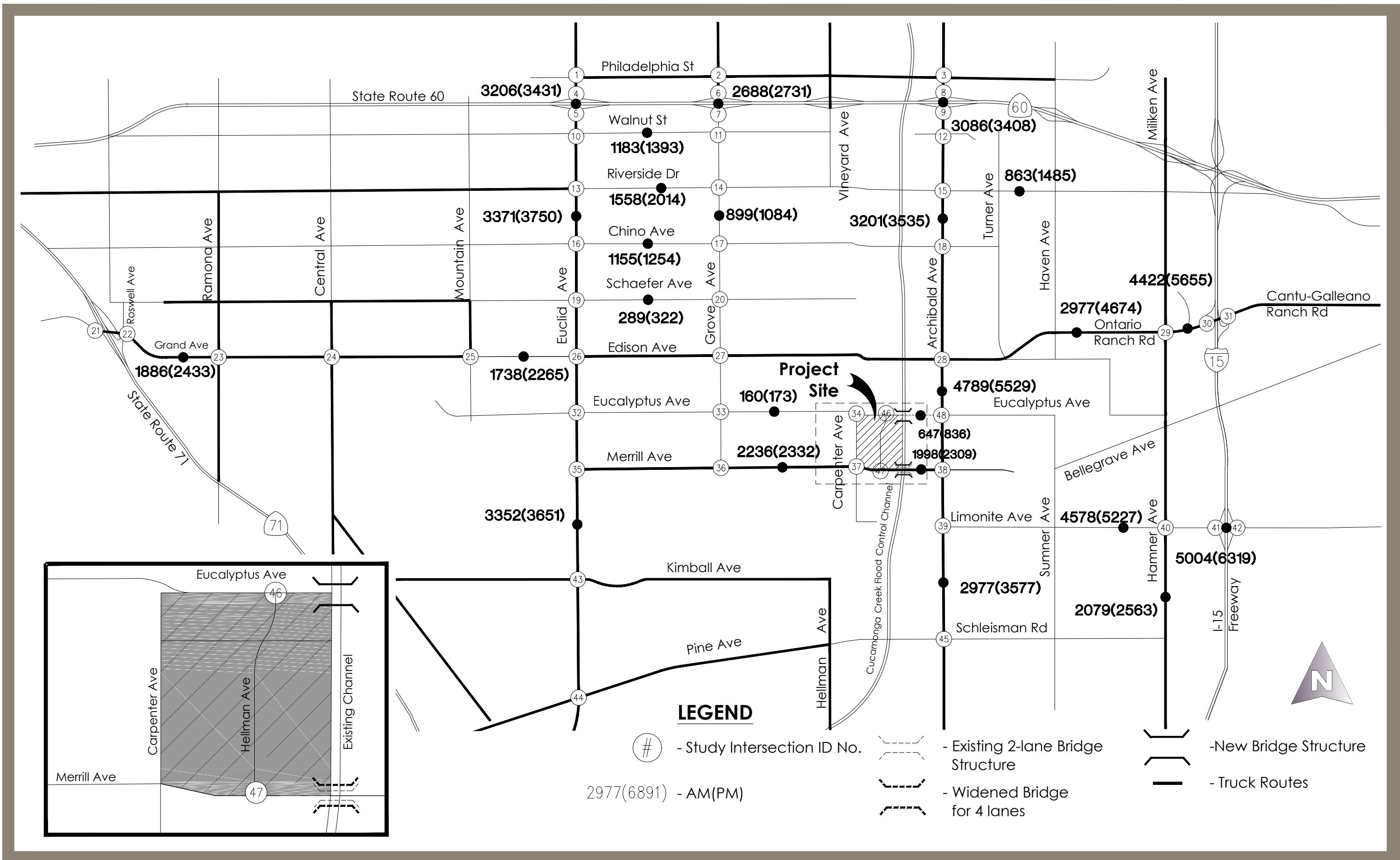
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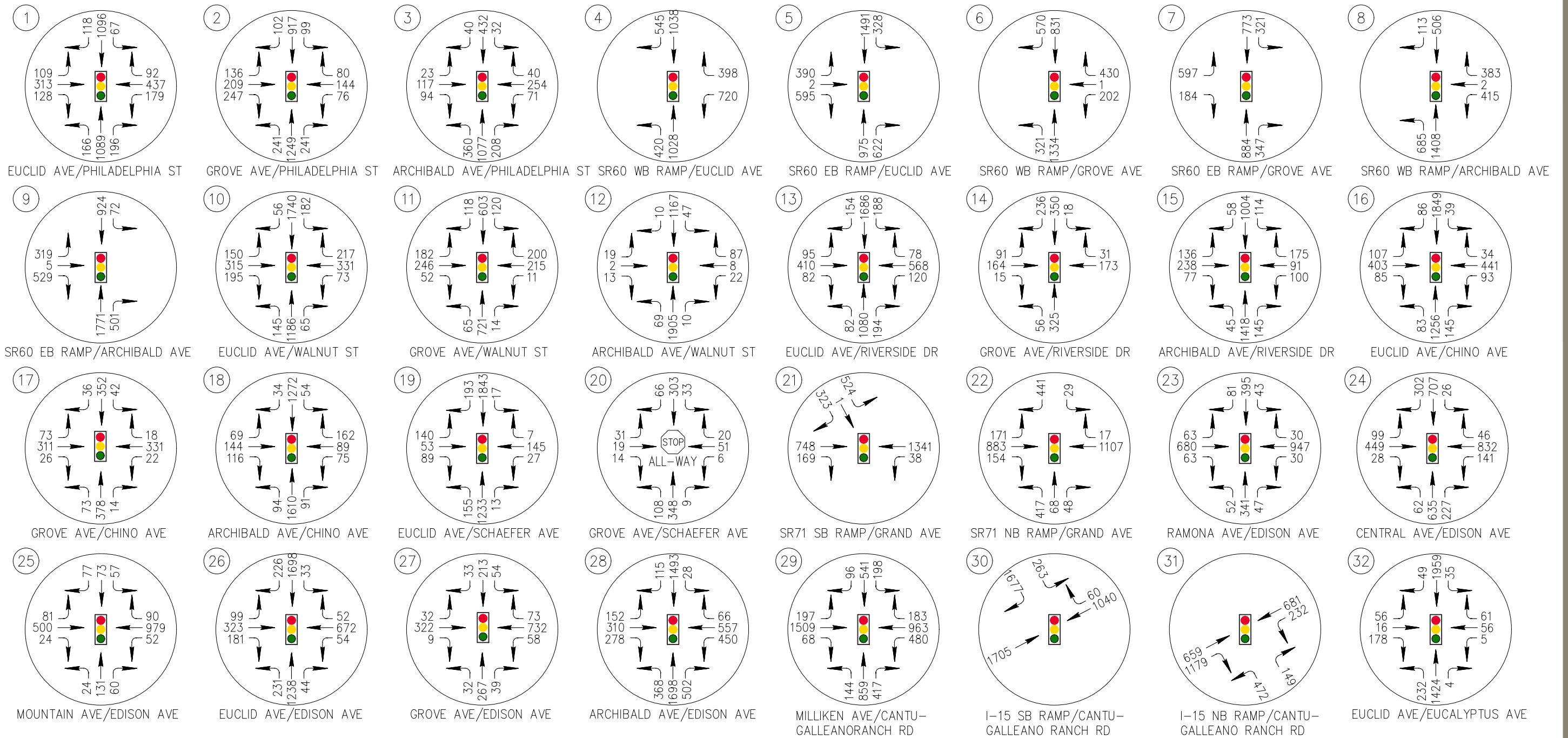
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- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 409 - Peak Hour Volume for Movement Indicated
- ☑ - Signalized Intersection





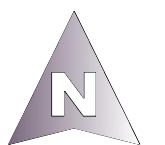


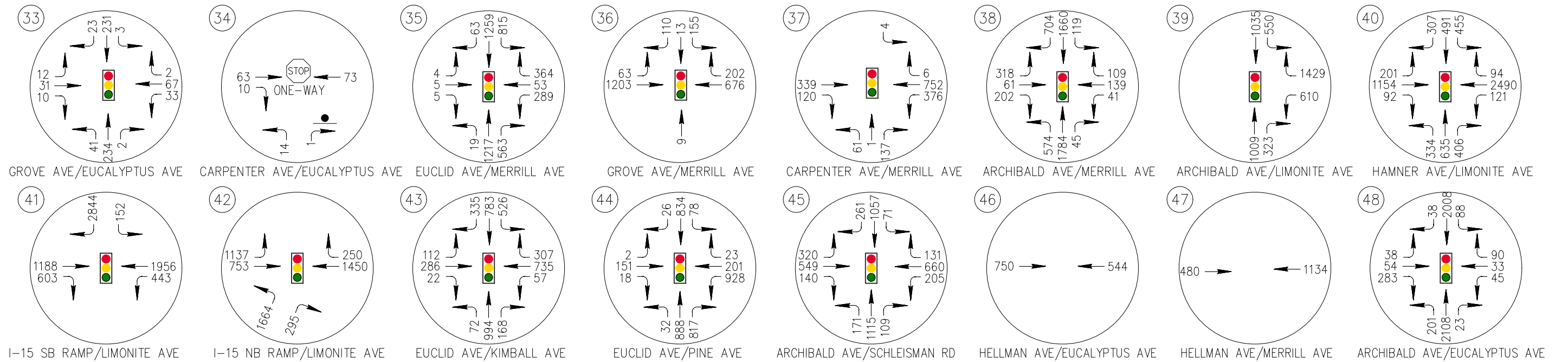




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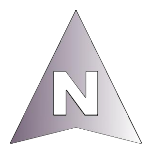
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- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 144 - Peak Hour Volume for Movement Indicated
- Signalized Intersection



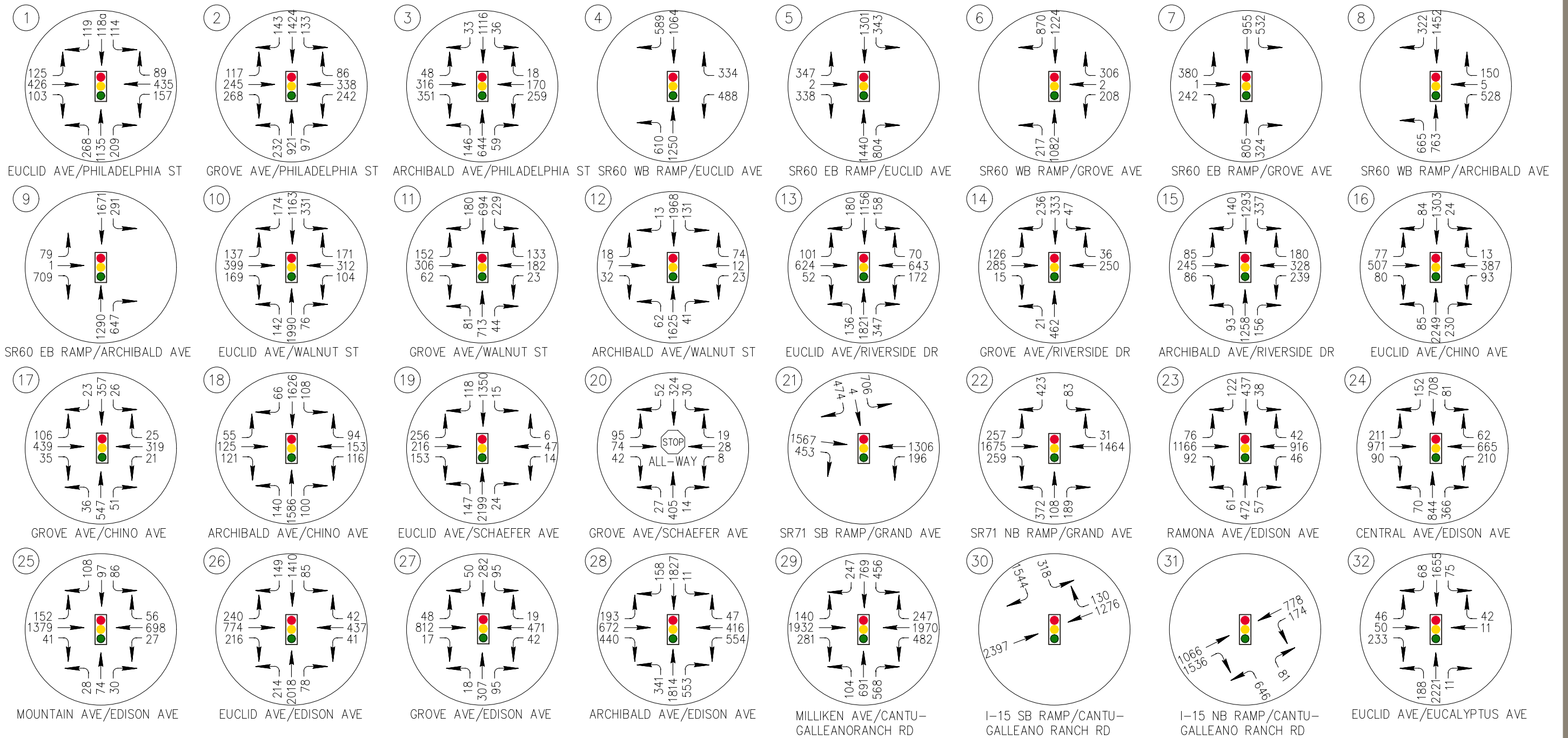


**LEGEND**

- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 171 - Peak Hour Volume for Movement Indicated
- Signalized Intersection



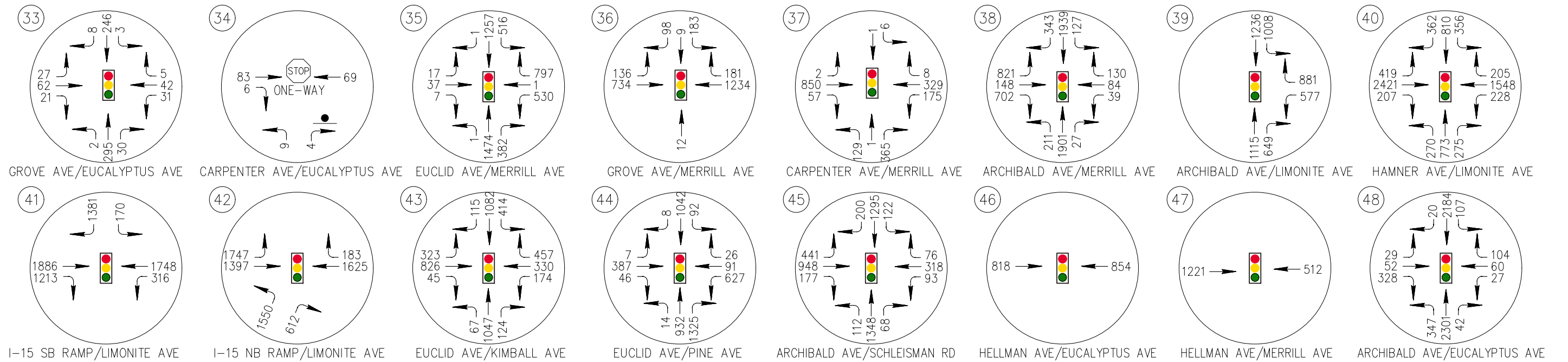




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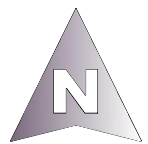
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- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 104 - Peak Hour Volume for Movement Indicated
- ◫ - Signalized Intersection

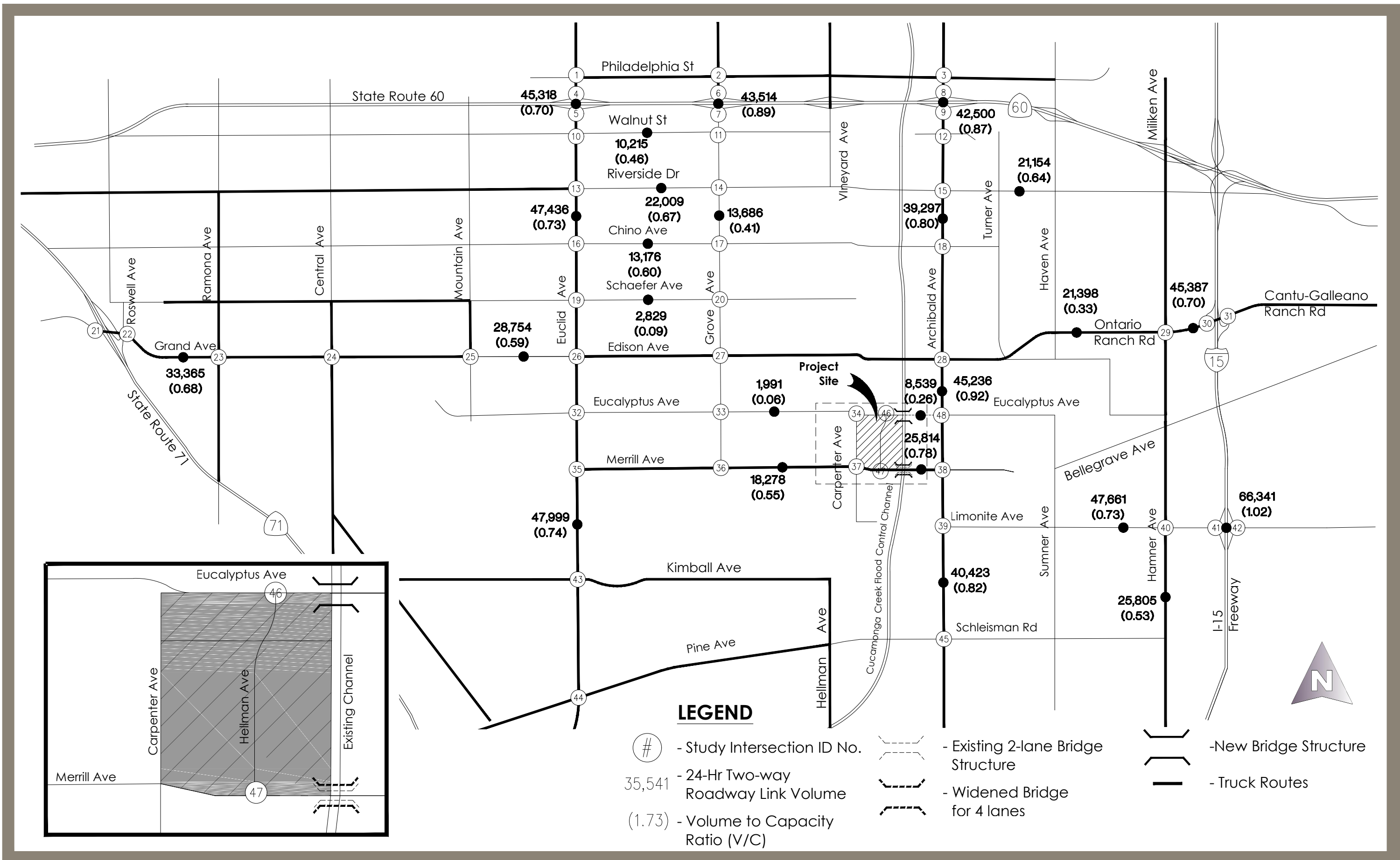




**LEGEND**

- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 112 - Peak Hour Volume for Movement Indicated
- Signalized Intersection





**Table 2-1A  
 Highway Capacity Manual (HCM) Analysis  
 Level of Service Descriptions  
 for Signalized Intersections**

Level of Service	Traffic Flow Description	Average Approach Delay Per Vehicle (SEC)
A	Operations with delay less than or equal to 5.0 sec per vehicle; signal progression extremely favorable and/or short cycle lengths; most vehicles do not stop	≤10.0
B	Operations with delay in the range of 5.1 to 15.0 sec per vehicle; good progression and/or short cycle lengths; higher levels of average delay; more vehicle stops than LOS A	10.01 to 20.00
C	Operations with delay in the range of 15.1 to 25.0 sec per vehicle; significant levels of delay	20.01 to 35.00
D	Operations with delay in the range of 25.1 to 40.0 sec per vehicle; noticeable congestion; unfavorable progression; long cycle lengths, or high v/c ratios; many vehicles stop and portion of vehicles not stopping declines; noticeable individual cycle failures	35.01 to 55.00
E	Operations with delay in the range of 40.1 to 60.0 sec per vehicle; limit of acceptable delay; poor progression; long cycle lengths and high v/c ratios; frequent occurrences of individual cycle failures	55.01 to 80.00
F	Operations with delay in excess of 60.0 sec per vehicle; considered unacceptable driver delay; congestion; oversaturation; poor progression; long cycle lengths; high v/c ratios over 1.00; many individual cycle failures	> 80.01

**Table 2-1B  
 Highway Capacity Manual (HCM) Analysis  
 Level of Service Descriptions  
 for Unsignalized Intersections**

Level of Service	Traffic Flow Description	Average Approach Delay Per Vehicle (SEC)
A	Operations with delay less than or equal to 10.0 sec per vehicle; most vehicles have a very short stop	≤10.0
B	Operations with delay in the range of 10.1 to 15.0 sec per vehicle; higher levels of delay, longer stops than LOS A	10.1 to 15.0
C	Operations with delay in the range of 15.1 to 25.0 sec per vehicle; significant levels of delay	15.1 to 25.0
D	Operations with delay in the range of 25.1 to 35.0 sec per vehicle; noticeable congestion; increased queue lengths; long delays	25.1 to 35.0
E	Operations with delay in the range of 35.1 to 50.0 sec per vehicle; limit of acceptable delay; very long delay; long queue lengths	35.1 to 50.0
F	Operations with delay in excess of 50.0 sec per vehicle; considered unacceptable driver delay; congestion; oversaturation; unacceptable queuing	> 50.0

**Table 2-2  
Existing Level of Service at Study Area Intersections**

Signalized Intersection	Existing (2017)			
	AM Peak Hour		PM Peak Hour	
	Delay (sec.)	LOS	Delay (sec.)	LOS
1 Euclid Ave / Philadelphia St	24.1	C	27.0	C
2 Grove Ave / Philadelphia St	18.0	B	22.6	C
3 Archibald Ave / Philadelphia St	16.8	B	19.7	B
4 SR60 WB Ramp / Euclid Ave	16.6	B	14.5	B
5 SR60 EB Ramp / Euclid Ave	16.5	B	15.5	B
6 SR60 WB Ramp / Grove Ave	17.2	B	17.4	B
7 SR60 EB Ramp / Grove Ave	24.8	C	21.6	C
8 SR60 WB Ramp / Archibald Ave	15.6	B	18.3	B
9 SR60 EB Ramp / Archibald Ave	13.5	B	19.9	B
10 Euclid Ave / Walnut St	15.6	B	16.6	B
11 Grove Ave / Walnut St	19.8	B	19.7	B
12 Archibald Ave / Walnut St	7.3	A	8.1	A
13 Euclid Ave / Riverside Dr	20.3	C	22.8	C
14 Grove Ave / Riverside Dr	21.6	C	22.6	C
15 Archibald Ave / Riverside Dr	11.9	B	14.6	B
16 Euclid Ave / Chino Ave	12.2	B	13.0	B
18 Archibald Ave / Chino Ave	8.1	A	8.6	A
19 Euclid Ave / Schaefer Ave	16.1	B	17.5	B
21 SR71 SB Ramp / Grand Ave	12.1	B	37.3	D
22 SR71 NB Ramp / Grand Ave	42.6	D	63.2	E
23 Ramona Ave / Edison Ave	19.2	B	21.3	C
24 Central Ave / Edison Ave	22.7	C	27.9	C
25 Mountain Ave/ Edison Ave	16.0	B	15.1	B
26 Euclid Ave / Edison Ave	15.0	B	15.6	B
28 Archibald Ave / Edison Ave	18.8	B	18.2	B
29 Milliken Ave / Cantu-Galleano Ranch Rd	32.8	C	33.7	C
30 I-15 SB Ramp / Cantu- Galleano Ranch Rd	10.0	A	9.8	A
31 I-15 NB Ramp / Cantu- Galleano Ranch Rd	6.3	A	4.0	A
32 Euclid Ave / Eucalyptus Ave	9.8	A	10.1	B
35 Euclid Ave / Merrill Ave	15.8	B	13.7	B
38 Archibald Ave / Merrill Ave	17.2	B	23.1	C
39 Archibald Ave / Limonite Ave	40.0	D	18.3	B
40 Hamner Ave / Limonite Ave	23.9	C	23.6	C
41 I-15 SB Ramp / Limonite Ave	17.3	B	15.8	B
42 I-15 NB Ramp / Limonite Ave	19.1	B	17.1	B
43 Euclid Ave / Kimball Ave	30.5	C	30.7	C
44 Euclid Ave / Pine Ave	23.9	C	43.1	D
45 Archibald Ave / Schleisman Rd	23.0	C	21.9	C
48 Archibald Ave / Eucalyptus Ave	5.0	A	3.4	A
Unsignalized Intersection	Existing (2017)			
	AM Peak Hour		PM Peak Hour	
	Delay (sec.)	LOS	Delay (sec.)	LOS
17 Grove Ave / Chino Ave	10.4	B	13.1	B
20 Grove Ave / Schaefer Ave	10.3	B	11.3	B
27 Grove Ave / Edison Ave	18.5	C	21.7	C
33 Grove Ave / Eucalyptus Ave	12.4	B	12.3	B
34 Carpenter Ave / Eucalyptus Ave	7.2	A	7.2	A
36 Grove Ave / Merrill Ave	13.9	B	13.1	B
37 Carpenter Ave / Merrill Ave	16.2	C	16.8	C



**Table 2-3  
 Opening Year (2023) No Project Level of Service at Study Area Intersections**

Signalized Intersection		Existing (2017) No Project				Opening Year (2023) No Project			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS
1	Euclid Ave / Philadelphia St	29.2	C	34.7	C	26.4	C	30.6	C
2	Grove Ave / Philadelphia St	19.0	B	21.4	C	18.6	B	20.9	C
3	Archibald Ave / Philadelphia St	16.2	B	19.1	C	15.3	B	19.5	B
4	SR60 WB Ramp / Euclid Ave	20.7	C	17.9	B	18.1	B	17.8	B
5	SR60 EB Ramp / Euclid Ave	21.8	C	19.4	B	33.7	C	22.5	C
6	SR60 WB Ramp / Grove Ave	22.7	C	24.4	C	21.1	C	19.0	B
7	SR60 EB Ramp / Grove Ave	37.3	D	29.3	C	35.4	D	26.8	C
8	SR60 WB Ramp / Archibald Ave	18.7	B	23.1	C	14.6	B	21.6	C
9	SR60 EB Ramp / Archibald Ave	16.3	B	28.6	C	18.9	B	29.8	C
10	Euclid Ave / Walnut St	17.8	B	19.1	B	19.2	B	22.8	C
11	Grove Ave / Walnut St	20.9	C	21.0	C	19.7	B	20.0	B
12	Archibald Ave / Walnut St	9.2	A	10.2	B	7.4	A	8.4	A
13	Euclid Ave / Riverside Dr	21.7	C	26.8	C	25.4	C	47.7	D
14	Grove Ave / Riverside Dr	24.4	C	26.8	C	16.5	B	15.9	B
15	Archibald Ave / Riverside Dr	13.6	B	16.5	B	18.1	B	28.6	C
16	Euclid Ave / Chino Ave	13.9	B	13.9	B	50.3	D	78.9	E
18	Archibald Ave / Chino Ave	9.4	A	9.8	A	19.1	B	27.7	C
19	Euclid Ave / Schaefer Ave	18.1	B	20.1	C	29.2	C	34.4	C
21	SR71 SB Ramp / Grand Ave	10.3	B	49.1	D	12.9	B	65.3	E
22	SR71 NB Ramp / Grand Ave	55.3	E	86.7	F	59.8	E	98.1	F
23	Ramona Ave / Edison Ave	21.2	C	24.6	C	22.6	C	32.1	C
24	Central Ave / Edison Ave	23.4	C	36.7	D	26.2	C	48.7	D
25	Mountain Ave / Edison Ave	18.0	B	16.7	B	15.6	B	15.0	B
26	Euclid Ave / Edison Ave	17.3	B	18.3	B	16.1	B	37.3	D
28	Archibald Ave / Edison Ave	19.7	B	19.0	B	95.2	F	144.2	F
29	Milliken Ave / Cantu-Galleano Ranch Rd	40.6	D	50.3	D	95.9	F	161.4	F
30	I-15 SB Ramp / Cantu-Galleano Ranch Rd	11.6	B	11.3	B	47.7	D	64.3	E
31	I-15 NB Ramp / Cantu-Galleano Ranch Rd	7.3	A	4.6	A	22.7	B	74.6	E
32	Euclid Ave / Eucalyptus Ave	11.8	B	11.9	B	19.2	B	21.3	C
35	Euclid Ave / Merrill Ave	18.8	B	15.8	B	74.0	E	25.9	C
38	Archibald Ave / Merrill Ave	18.7	B	26.4	C	27.4	C	46.6	D
39	Archibald Ave / Limonite Ave	43.8	D	19.2	B	26.1	C	28.4	C
40	Hamner Ave / Limonite Ave	26.1	C	25.7	C	65.8	E	78.0	E
41	I-15 SB Ramp / Limonite Ave	20.3	C	19.8	B	287.4	F	125.0	F
42	I-15 NB Ramp / Limonite Ave	22.1	C	20.3	C	77.5	E	92.1	F
43	Euclid Ave / Kimball Ave	39.5	D	39.5	D	23.1	C	26.5	C
44	Euclid Ave / Pine Ave	25.5	C	49.6	D	24.1	C	25.3	C
45	Archibald Ave / Schleisman Rd	24.7	C	21.9	C	25.2	C	28.0	C
48	Archibald Ave / Eucalyptus Ave	-	-	-	-	89.5	F	139.9	F
Unsignalized Intersection		Existing (2017) No Project				Opening Year (2023) No Project			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS
17	Grove Ave / Chino Ave	10.4	B	13.1	B	42.1	E	107.1	F
20	Grove Ave / Schaefer Ave	10.3	B	11.3	B	11.7	B	13.6	B
27	Grove Ave / Edison Ave	18.5	C	21.7	C	205.3	F	321.4	F
33	Grove Ave / Eucalyptus Ave	12.4	B	12.3	B	18.8	C	18.9	C
34	Carpenter Ave / Eucalyptus Ave	7.2	A	7.2	A	9.5	A	9.6	A
36	Grove Ave / Merrill Ave	13.9	B	13.1	B	119.1	F	202.5	F
37	Carpenter Ave / Merrill Ave	16.2	C	16.8	C	655.4	F	1166.9	F

March 2018

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### 2.1.5. Existing 2017 Traffic Conditions

Table 2-2 shows that all existing study area intersections except one are operating at acceptable level of service (LOS) E or higher during am and pm peak hours with existing 2017 traffic volumes and improvements. All unsignalized study area intersections are currently operating at Level of Service C or better during peak hours. Only the Grand Avenue signalized intersection at the SR-71 NB off-ramp (Int. No. 22) is predicted to operate at LOS F during the pm peak hour under existing conditions.

Figure 2-3 shows that study area roadway segments have volume-to-capacity (v/c) ratios below 0.90 and indicating LOS D or better operation based on existing 24-hour volumes and improvements.

### 2.1.6. Opening Year 2023 – No Project Traffic Conditions

Analysis of Opening Year 2023 - No Project conditions includes traffic from the cumulative development projects to be completed by 2023 as shown on Figure 2-4 and implementation of the following twenty-two (22) associated roadway/intersection improvements within the study area as listed on Table 2-4 and shown on Figures 2-9A through 2-9C.

Table 2-3 shows that for forecast Opening Year 2023 No Project conditions, thirty-eight (38) intersections are predicted to operate at LOS E and above in both peak hours. Table 2-5 shows that ten (10) intersections are predicted to operate at LOS F in at least one peak hour.

All stop-controlled intersections identified above satisfy at least one traffic signal warrant under Opening Year 2023 (no Project) conditions, and therefore, signalization of these intersections is considered a feasible mitigation.



March 2018

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Figure 2-6 shows that study area roadway segments will continue to typically have volume-to-capacity ratios of 0.90 or below indicating LOS D or better operation based on Opening Year 2023 No Project 24-hour volumes.

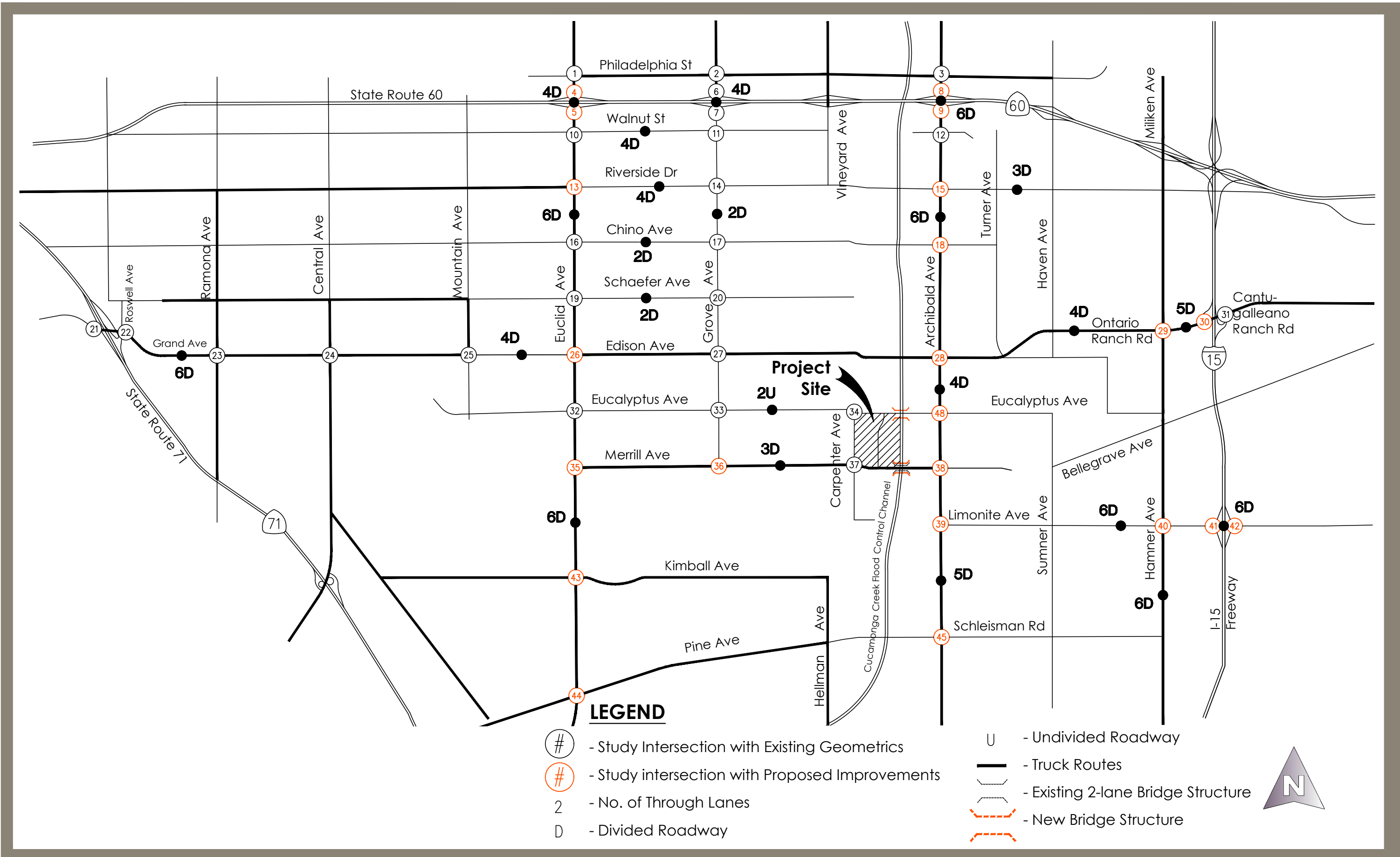
#### 2.1.7. Horizon Year 2040 – No Project Traffic Conditions

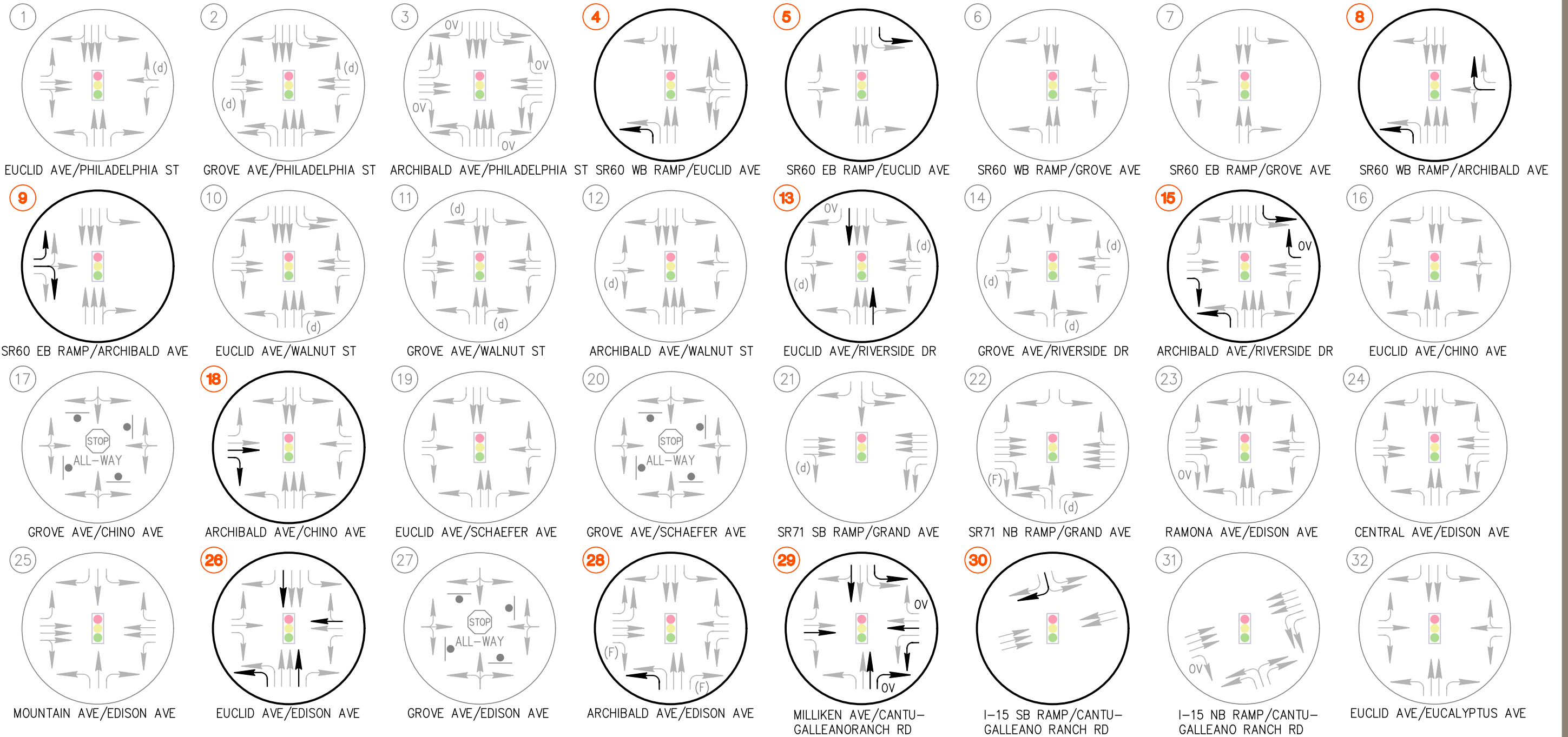
This scenario analyzes Horizon Year 2040 No Project traffic volume forecasts on the Horizon Year 2040 circulation network. The circulation network roadway is considered identical for Horizon Year 2040 no project and with project. For this scenario, the study area roadways and intersections are considered constructed to their Master Plan configuration and capacities. Where identified from other studies or existing conditions, some facilities are shown improved to a configuration greater than that indicated in the Master Plan (i.e. free right-turn lanes, additional turn lanes, etc.).

Table 2-6 shows that with the previous recommended improvements to address Opening Year 2023 cumulative project impacts and completion of planned Master Plan roadway and intersection improvements, all intersections are predicted to operate at acceptable LOS and no further mitigation improvements are indicated.

**Table 2-4**  
**Cumulative Project Intersection Improvements**  
**Planned for Implementation by 2023**

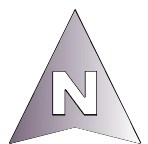
Study Intersection	Improvements	Study Recommended/Identified
4. Euclid Ave/SR-60 WB Ramps	Add 2nd NBL	Watson Industrial
5. Euclid Ave/SR-60 EB Ramps	Add 2nd SBL	Watson Industrial
8. Archibald Ave/ SR-60 WB Ramps	Add 2nd NBL Restripe WBTL to WBLTR	Colony Commerce East Countryside
9. Archibald Ave/ SR-60 EB Ramps	Restripe EBTL to EBLTR	Colony Commerce East
13. Euclid Ave/Riverside Dr	Add 3rd NBT, 3rd SBT	Watson Industrial
15. Archibald Ave/Riverside Dr	Add 2nd NBL, 2nd SBL Add EBR, WBR w/O.L.	Colony Commerce East
18. Archibald Ave/Chino Ave	Add 2nd EBT, Add EBR	Countryside
26. Euclid Ave/Edison Ave	Add 2nd NBL, 3rd NBT, 3rd SBT, 2nd WBT	Watson Industrial
28. Archibald Ave/Edison Ave	Add 2nd NBL	Colony Commerce East
29. Hamner Ave/Cantu-Galleano Ranch Rd/Ontario Ranch Rd	Add 2nd NBT, NBR w/O.L. Add 2nd SBL, 2nd SBT Add 2nd EBT Add 2nd WBL, WBT, WBR O.L	Eastvale Industrial Development
30. I-15 SB Ramps/ Cantu-Galleano Ranch Rd/Ontario Ranch Rd	Restripe No. 2 SBL to LR to provide SBL, SBLR, and SBR	Eastvale Industrial Development
35. Euclid Ave/Merrill Ave	Add 3rd NBT, 2nd SBL, 3rd SBT, WBR w/O.L. 2nd WBL	Colony Commerce East
36. Grove Avenue/Merrill Avenue	Add EBL, 2nd EBT, 2nd WBT	Colony Commerce East
38. Archibald Ave/Merrill Ave	Add 2nd NBL, 3rd NBT Add 3rd SBT, SBR O.L. Add 2nd EBL, 2nd EBT, Free EBR Add 2nd WBT	Colony Commerce East
39. Archibald Ave/Limonite Ave	Add 2nd NBT Add 2nd SBL, SBT Add 2nd WBL, 2nd WBR	Colony Commerce East
40. Hamner Ave/Limonite Ave	NBR O.L., SBR O.L., Add 3rd WBT Add 3rd SBT, EBR O.L. WBR O.L.	Colony Commerce East Eastvale Crossing Watson Industrial
41. I-15 SB Ramps/Limonite Ave	Add 3rd EBT, 3rd WBT	Eastvale Crossing
42. I-15 NB Ramps/Limonite Ave	Add 3rd EBT, 3rd WBT	Watson Industrial
43. Euclid Ave/Kimball Ave	Add 2nd SBL, SBR w/O.L. Add 3rd NBT, 3rd SBT Add 2nd EBL, EBR Add WBR	Colony Commerce East
44 Euclid Ave/Pine Ave	Add 3rd NBT, 3rd SBT, 2nd NBR	Eastvale Crossing
45. Archibald Ave/Schleisman Rd	SBR O.L.	Watson Industrial
47. Hellman Ave/Merrill Ave	NBL, NBR, 2nd EBT, EBR WBL, 2nd WBT	Colony Commerce East

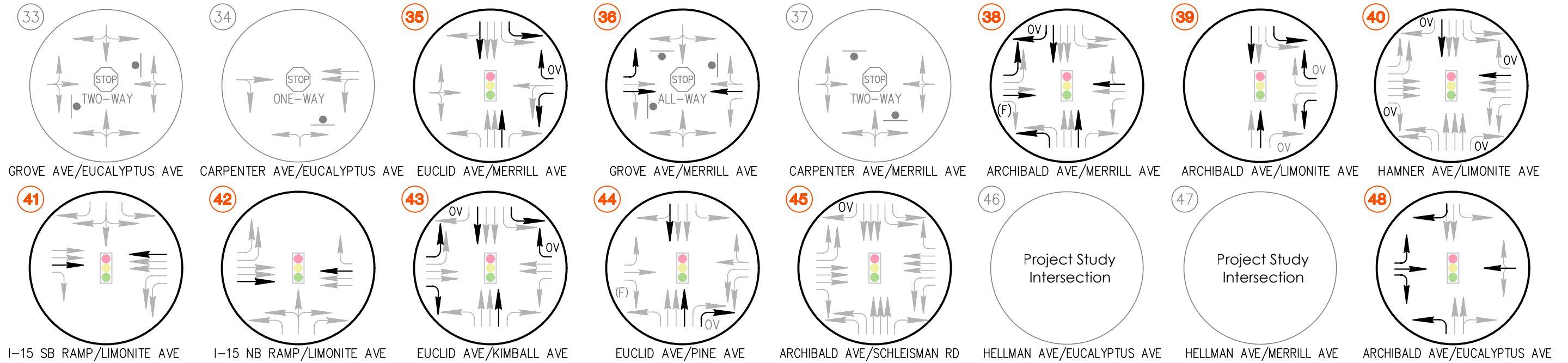




**LEGEND**

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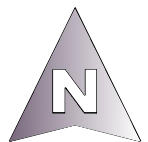
**LEGEND**

**Existing 2017 Network**

- # - Study Intersection with Geometrics and Controls
- (d) - De Facto Right-Turn
- (F) - Free Right-Turn
- OV - Overlap Right-Turn Signal Phase
- STOP - Stop-Controlled Intersection
- - Stop-Controlled Approach
- 🚦 - Signalized Intersection
- ↔ - Existing Turning Movement Lane

**Proposed Cumulative Projects' Improvements to Network**

- # - Study Intersection with Proposed Improvements
- (F) - Proposed Free Right-Turn
- OV - Proposed Overlap Right-Turn Signal
- STOP - Proposed Stop-Controlled Intersection
- - Proposed Stop-Controlled Approach
- - Proposed Signalized Intersection
- ↔ - Proposed Turning Movement Lane



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**Table 2-5 - Opening Year 2023 No Project - Deficient Intersections**

<b>Signalized Intersections</b>	<b>Am Peak Hour</b>		<b>Pm Peak Hour</b>	
	<b>Delay (s)</b>	<b>LOS</b>	<b>Delay (s)</b>	<b>LOS</b>
22. SR-71 NB Ramps/Grand Avenue	59.8	E	98.1	F
28. Archibald Avenue/Edison Avenue	95.2	F	144.2	F
29. Milliken Avenue/Cantu-Galleano Ranch Rd	95.9	F	161.4	F
41. I-15 SB Ramp/Limonite Avenue	287.4	F	125.0	F
42. I-15 NB Ramp/Limonite Avenue	77.5	E	92.1	F
48. Archibald Avenue/Eucalyptus Avenue	89.5	F	139.9	F
<b>Stop-controlled Intersections</b>	<b>Am Peak Hour</b>		<b>Pm Peak Hour</b>	
	<b>Delay (s)</b>	<b>LOS</b>	<b>Delay (s)</b>	<b>LOS</b>
17. Grove Avenue/Chino Avenue	42.1	E	107.1	F
27. Grove Avenue/Edison Avenue	205.3	<b>F</b>	321.4	<b>F</b>
36. Grove Avenue/Merrill Avenue	119.1	<b>F</b>	202.5	<b>F</b>
37. Carpenter Avenue/Merrill Avenue	655.4	<b>F</b>	1166.9	<b>F</b>

**Table 2-6**  
**Horizon Year 2040 No Project Level of Service at Study Area Intersections**

Signalized Intersection		Horizon Year 2040 No Project			
		AM Peak Hour		PM Peak Hour	
		Delay (sec.)	LOS	Delay (sec.)	LOS
1	Euclid Ave / Philadelphia St	19.9	B	28.2	C
2	Grove Ave / Philadelphia St	20.3	C	24.0	C
3	Archibald Ave / Philadelphia St	15.2	B	19.5	B
4	SR60 WB Ramp / Euclid Ave	20.6	C	20.4	C
5	SR60 EB Ramp / Euclid Ave	39.4	D	28.3	C
6	SR60 WB Ramp / Grove Ave	32.3	C	36.7	D
7	SR60 EB Ramp / Grove Ave	61.8	E	51.2	D
8	SR60 WB Ramp / Archibald Ave	16.3	B	52.8	D
9	SR60 EB Ramp / Archibald Ave	13.6	B	14.7	B
10	Euclid Ave / Walnut St	22.6	C	31.3	C
11	Grove Ave / Walnut St	22.2	C	22.7	C
12	Archibald Ave / Walnut St	7.2	A	8.5	A
13	Euclid Ave / Riverside Dr	22.2	C	32.5	C
14	Grove Ave / Riverside Dr	16.2	B	16.3	B
15	Archibald Ave / Riverside Dr	17.4	B	23.7	C
16	Euclid Ave / Chino Ave	12.1	B	14.2	B
17	Grove Ave / Chino Ave	11.0	B	11.7	B
18	Archibald Ave / Chino Ave	17.8	B	20.7	C
19	Euclid Ave / Schaefer Ave	17.6	B	21.2	C
20	Grove Ave / Schaefer Ave	9.2	A	10.1	B
21	SR71 SB Ramp / Grand Ave	12.5	B	48.8	D
22	SR71 NB Ramp / Grand Ave	19.9	B	24.6	C
23	Ramona Ave / Edison Ave	20.8	C	26.2	C
24	Central Ave / Edison Ave	24.2	C	40.7	D
25	Mountain Ave / Edison Ave	15.2	B	15.1	B
26	Euclid Ave / Edison Ave	16.6	B	21.7	C
27	Grove Ave / Edison Ave	10.1	B	10.6	B
28	Archibald Ave / Edison Ave	23.2	C	42.6	D
29	Milliken Ave / Cantu-Galleano Ranch Rd	34.9	C	58.2	E
30	I-15 SB Ramp / Cantu- Galleano Ranch Rd	14.4	B	6.8	A
31	I-15 NB Ramp / Cantu- Galleano Ranch Rd	13.7	B	51.4	D
32	Euclid Ave / Eucalyptus Ave	12.6	B	13.6	B
33	Grove Ave / Eucalyptus Ave	6.6	A	6.9	A
35	Euclid Ave / Merrill Ave	25.4	C	33.0	C
36	Grove Ave / Merrill Ave	6.7	A	8.8	A
37	Carpenter Ave / Merrill Ave	6.6	A	12.4	B
38	Archibald Ave / Merrill Ave	28.0	C	49.4	D
39	Archibald Ave / Limonite Ave	31.6	C	28.2	C
40	Hamner Ave / Limonite Ave	52.8	D	47.1	D
41	I-15 SB Ramp / Limonite Ave	5.4	A	12.5	B
42	I-15 NB Ramp / Limonite Ave	43.0	D	43.5	D
43	Euclid Ave / Kimball Ave	28.1	C	30.4	C
44	Euclid Ave / Pine Ave	20.8	C	22.3	C
45	Archibald Ave / Schleisman Rd	21.3	C	23.3	C
46	Hellman Ave / Eucalyptus Ave	1.3	A	0.8	A
47	Hellman Ave / Merrill Ave	1.1	A	1.0	A
48	Archibald Ave / Eucalyptus Ave	21.9	C	52.4	D
Unsignalized Intersection		Horizon Year 2040 No Project			
		AM Peak Hour		PM Peak Hour	
		Delay (sec.)	LOS	Delay (sec.)	LOS
34	Carpenter Ave / Eucalyptus Ave	9.4	A	9.4	A

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## 2.1.8. Freeway Mainline Analysis with Existing Peak Hour Volumes

### 2.1.8.1. State Route 60

Figure 2-10A provides a summary of mainline LOS analysis for the SR-60 Freeway with existing peak hour volumes using the 2010 Highway Capacity Manual method for basic freeway segments and merge/diverge points. This figure shows that typically SR-60 study segments are operating at LOS D or better with existing peak hour volumes. Existing level of service on the westbound SR-60 is LOS E at the Euclid Avenue off-ramp in both the am and pm peak hours. LOS calculations are included in the appendices.

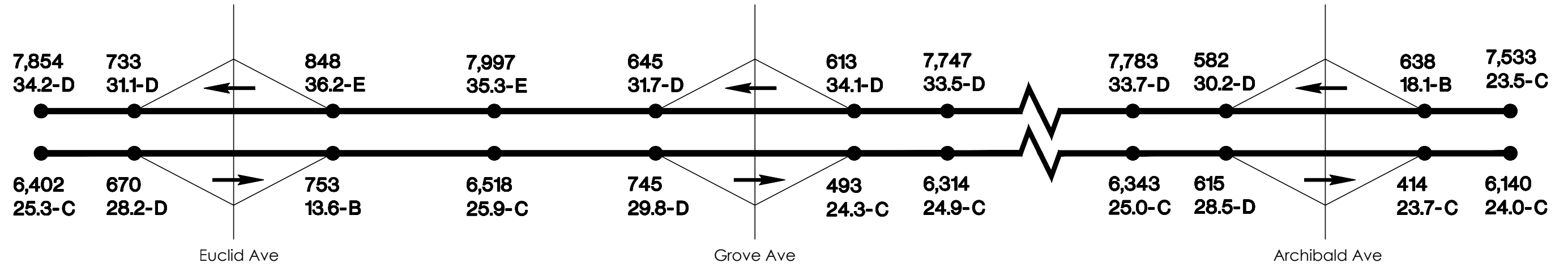
### 2.1.8.2. Interstate 15

Figure 2-10B provides a summary of mainline LOS analysis for the I-15 Freeway with existing peak hour volumes using the 2010 Highway Capacity Manual method for basic freeway segments and merge/diverge points. This figure shows that typically I-15 study segments are operating at LOS D or better with existing peak hour volumes. LOS calculations are included in the appendices.



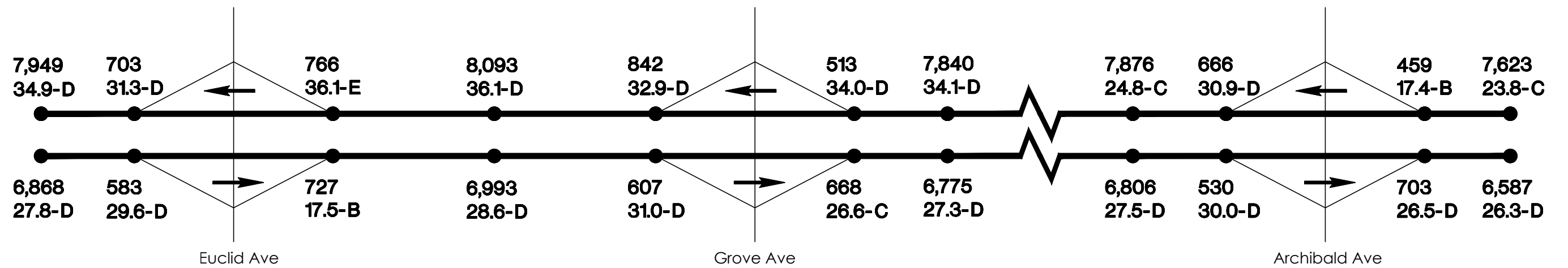
AM Peak Hour

SR-60 Freeway



PM Peak Hour

SR-60 Freeway

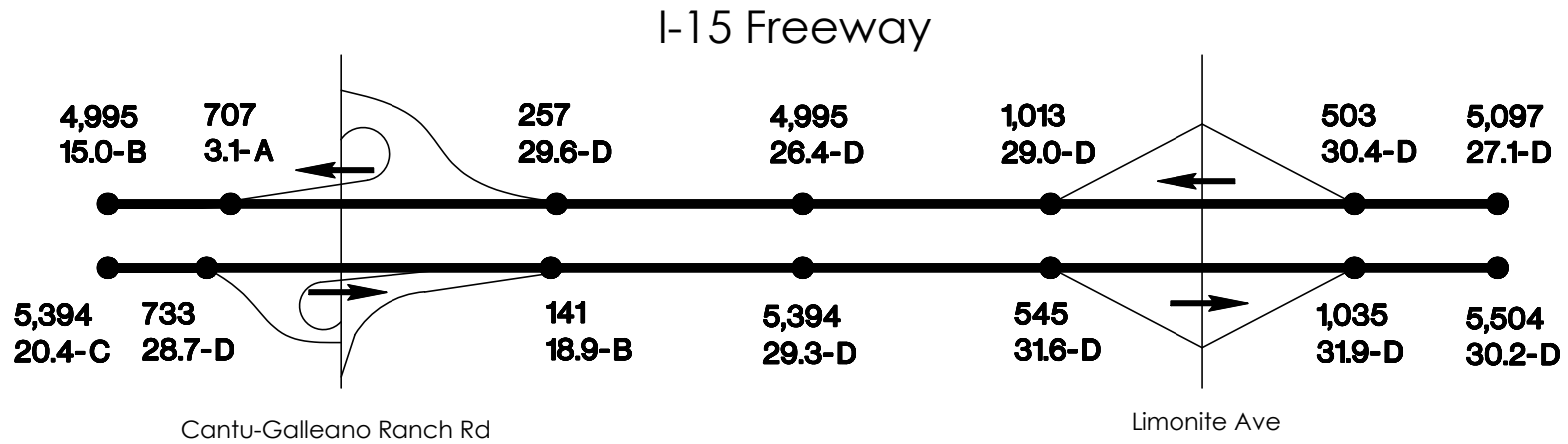


Legend

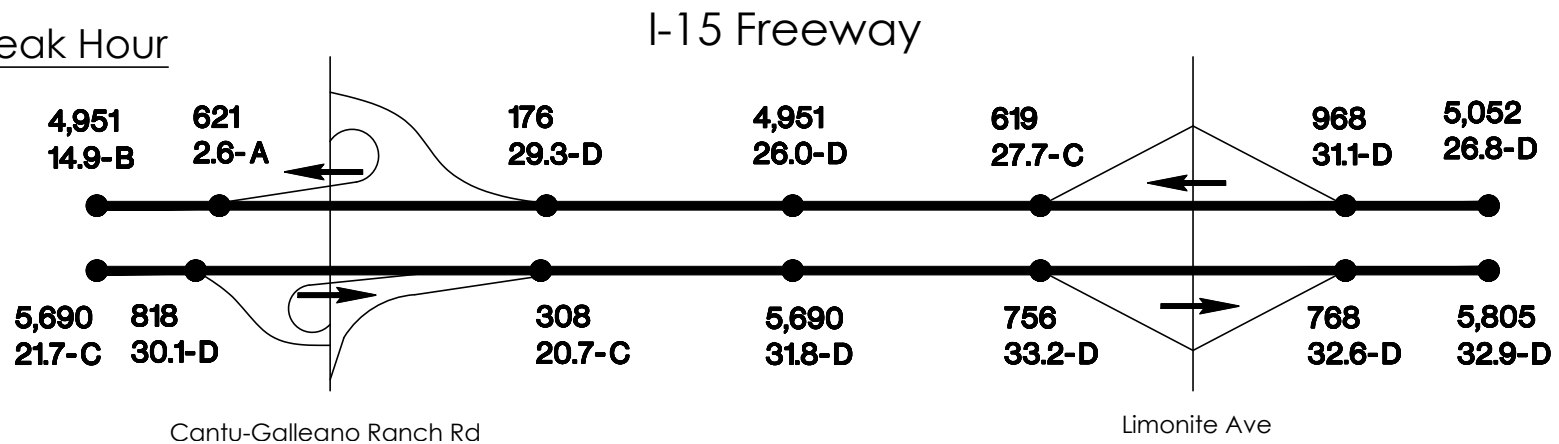
- X,XXX** - Peak Hour Trip Volume
- XX.X** - Passenger Cars Per Mile per Lane (PCPMPL)
- F** - LOS



AM Peak Hour



PM Peak Hour



Legend

- X,XXX** - Peak Hour Trip Volume
- XX.X** - Passenger Cars Per Mile per Lane (PCPMPL)
- F** - LOS

**SECTION 3.0** **FORECAST TRAFFIC**

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**3.1. PROPOSED SPECIFIC PLAN TRIP GENERATION**

Year 2023 site build-out trip generation of the proposed West Ontario Commerce Center development is shown on Table 3-1. Trip generation equations used to forecast traffic volumes produced by the project are identified by the Institute of Transportation Engineers (ITE), in *Trip Generation*, 9<sup>th</sup> Edition. Vehicle trips, including truck volumes, have been converted to passenger car equivalent (PCE) trips per the procedures of the *Fontana Truck Trip Generation Study*.

3.1.1. Project Build-out (Opening Year 2023)

At build-out, anticipated for completion in 2023, the proposed project is estimated to generate an average of 16,830 PCE vehicle trips ends per weekday. Forecast peak hour traffic generation is 1,174 inbound and 299 outbound PCE vehicle trips in the am peak hour and 382 inbound and 977 outbound trips in the pm peak hour.

3.1.2. Comparison to General Plan Site Trip Generation

Table 3-2 provides site trip generation as allowed under the current General Plan considering a maximum floor area ratio (FAR). As shown on Table 3-2, with the General Plan scenario, daily PCE trip generation increases to 24,564 trip ends per day, an increase of approximately 46% over the proposed specific plan land use.

3.1.3. Project Trip Distribution

Figures 3-1A through 3-1D show the Project trip distributions by analysis year, peak hours, and for trucks, as appropriate. The trip distributions shown on these figures were obtained from the San Bernardino Association of Governments (SANBAG) based on select zone traffic forecasts performed for this study using the San Bernardino (County)

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Traffic Analysis Model (SBTAM). SBTAM model output used to determine the Project trip distribution is included in the appendices.

### 3.2. PROJECT ONLY TRAFFIC VOLUME FORECASTS

Using the cumulative trip generation for each project phase and the appropriate project trip distribution, project only study area peak hour intersection turning movement and daily roadway volumes were developed for each analysis scenario.

#### 3.2.1 Project Only Traffic Volume Forecasts

Figure 3-2A provides Project only am and pm peak hour two-way roadway link volumes on study area roadway segments. Figures 3-2B through 3-2E show Project only weekday am and pm peak hour intersection turning movement volumes at study area intersections. Figure 3-3 shows Project only weekday 24-hour volumes on roadway segments and volume-to-capacity (v/c) ratios.

**Table 3-1  
Project Trip Generation (Specific Plan)**

**Trip Generation Rates\***

Land Use	Unit	ITE Land Code	Quantity	Daily Rate	AM Peak Hour Split		PM Peak Hour Split			
					Rate	In	Out	Rate	In	Out
1. Warehouse	1000 SF	150	2,350,005	Eqn <sup>1A</sup>	Eqn <sup>1B</sup>	79%	21%	Eqn <sup>1C</sup>	25%	75%
2. Business Park	1000 SF	770	555,505	Eqn <sup>2A</sup>	Eqn <sup>2B</sup>	85%	15%	Eqn <sup>2C</sup>	0.26	74%

Eqn<sup>1A</sup> Ln(T) = 0.86Ln(X)+2.24  
Eqn<sup>1B</sup> Ln(T) = 0.55Ln(X)+1.88  
Eqn<sup>1C</sup> Ln(T) = 0.64Ln(X)+1.14  
Eqn<sup>2A</sup> T = 10.62(X)+715.61  
Eqn<sup>2B</sup> Ln(T) = 0.97Ln(X)+0.49  
Eqn<sup>2C</sup> Ln(T) = 0.90Ln(X)+0.85

X = 1000 Sq. Feet Gross Floor Area

**Project Trip Generation**

Land Use	Quantity	ADT	Total	AM Peak Hour Volume		PM Peak Hour Volume		
				In	Out	Total	In	Out
1a. Warehouse East	1,253,889	3,674	298	235	63	266	67	199
1b. Warehouse West	1,276,116	4,124	321	254	67	289	72	217
2. Business Park	555,505	6,615	750	638	113	691	180	511
<b>Total</b>		<b>14,413</b>	<b>1,369</b>	<b>1,127</b>	<b>242</b>	<b>1,246</b>	<b>319</b>	<b>927</b>

**Project Trip Generation with PCE Conversion\*\***

Land Use	Quantity	ADT	Total	AM Peak Hour Volume		PM Peak Hour Volume		
				In	Out	Total	In	Out
1a. Warehouse East	1,253,889	4,813	347	257	90	318	96	222
1b. Warehouse West	1,276,116	5,402	375	279	96	350	106	244
2. Business Park	555,505	6,615	750	638	113	691	180	511
<b>Total</b>		<b>16,830</b>	<b>1,472</b>	<b>1,174</b>	<b>299</b>	<b>1,359</b>	<b>382</b>	<b>977</b>

\* Source: ITE Trip Generation Manual, 9th Edition

\*\* Source: Fontana Truck Trip Generation Study

**Project Passenger Car Trips**

Land Use	Quantity	ADT	Total	AM Peak Hour Volume		PM Peak Hour Volume		
				In	Out	Total	In	Out
1a. Warehouse East		2,924	267	221	46	232	48	184
1b. Warehouse West		3,282	286	238	48	250	50	200
2. Business Park		0	0	0	0	0	0	0
<b>Total</b>		<b>6,206</b>	<b>553</b>	<b>459</b>	<b>94</b>	<b>482</b>	<b>98</b>	<b>384</b>

**Project TRUCK Trips**

Land Use	Quantity	ADT	Total	AM Peak Hour Volume		PM Peak Hour Volume		
				In	Out	Total	In	Out
1a. Warehouse East		750	31	14	17	34	19	15
1b. Warehouse West		842	35	16	19	39	22	17
2. Business Park		0	0	0	0	0	0	0
<b>Total</b>		<b>1,592</b>	<b>66</b>	<b>30</b>	<b>36</b>	<b>73</b>	<b>41</b>	<b>32</b>

**Project TRUCK Trips PCE**

<b>Total</b>	<b>4,010</b>	<b>169</b>	<b>77</b>	<b>92</b>	<b>186</b>	<b>104</b>	<b>82</b>
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**Table 3-2  
Project Trip Generation per TOP Max FAR (General Plan)**

**Trip Generation Rates\***

Land Use	Unit	ITE Land Code	Quantity	Daily Rate	AM Peak Hour Split		PM Peak Hour Split			
					Rate	In	Out	Rate	In	Out
1. Warehouse	1000 SF	150	1,391,641	Eqn <sup>1A</sup>	Eqn <sup>1B</sup>	79%	21%	Eqn <sup>1C</sup>	25%	75%
2. Business Park	1000 SF	770	1,600,933	Eqn <sup>2A</sup>	Eqn <sup>2B</sup>	85%	15%	Eqn <sup>2C</sup>	0.26	74%
		Eqn <sup>1A</sup>	Ln(T) = 0.86Ln(X)+2.24		Eqn <sup>2A</sup>	T = 10.62(X)+715.61				
		Eqn <sup>1B</sup>	Ln(T) = 0.55Ln(X)+1.88		Eqn <sup>2B</sup>	Ln(T) = 0.97Ln(X)+0.49				
		Eqn <sup>1C</sup>	Ln(T) = 0.64Ln(X)+1.14		Eqn <sup>2C</sup>	Ln(T) = 0.90Ln(X)+0.85				

X = 1000 Sq. Feet Gross Floor Area

**Project Trip Generation**

Land Use	Quantity	ADT	AM Peak Hour Volume			PM Peak Hour Volume		
			Total	In	Out	Total	In	Out
1a. Warehouse East	695,821	2,614	240	190	50	206	52	154
1b. Warehouse West	695,820	2,614	240	190	50	206	52	154
2. Business Park	1,600,933	17,718	2,094	1,780	314	1,791	466	1,325
<b>Total</b>		<b>22,946</b>	<b>2,574</b>	<b>2,159</b>	<b>415</b>	<b>2,203</b>	<b>570</b>	<b>1,633</b>

**Project Trip Generation with PCE Conversion\*\***

Land Use	Quantity	ADT	AM Peak Hour Volume			PM Peak Hour Volume		
			Total	In	Out	Total	In	Out
1a. Warehouse East	695,821	3,423	273	206	67	242	72	170
1b. Warehouse West	695,820	3,423	273	206	67	242	72	170
2. Business Park	1,600,933	17,718	2,094	1,780	314	1,791	466	1,325
<b>Total</b>		<b>24,564</b>	<b>2,640</b>	<b>2,192</b>	<b>448</b>	<b>2,275</b>	<b>610</b>	<b>1,665</b>

\* Source: ITE Trip Generation Manual, 9th Edition

\*\* Source: Fontana Truck Trip Generation Study

**Project Passenger Car Trips**

Land Use	Quantity	ADT	AM Peak Hour Volume			PM Peak Hour Volume		
			Total	In	Out	Total	In	Out
1a. Warehouse East		2,081	219	180	39	183	39	144
1b. Warehouse West		2,081	219	180	39	183	39	144
2. Business Park		17,718	0	0	0	0	0	0
<b>Total</b>		<b>21,880</b>	<b>438</b>	<b>360</b>	<b>78</b>	<b>366</b>	<b>78</b>	<b>288</b>

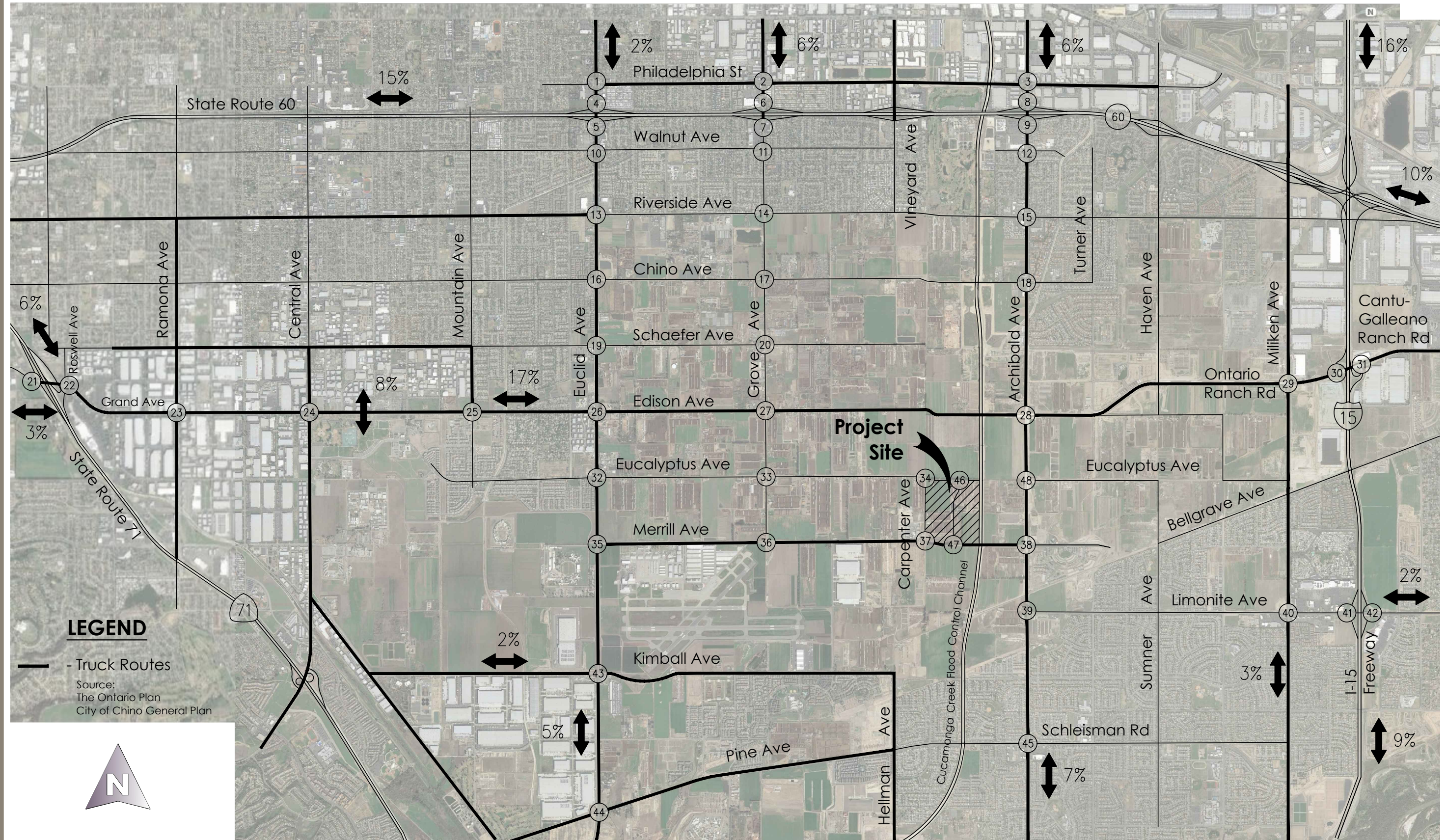
**Project TRUCK Trips**

Land Use	Quantity	ADT	AM Peak Hour Volume			PM Peak Hour Volume		
			Total	In	Out	Total	In	Out
1a. Warehouse East		533	21	10	11	23	13	10
1b. Warehouse West		533	21	10	11	23	13	10
2. Business Park		0	0	0	0	0	0	0
<b>Total</b>		<b>1,066</b>	<b>42</b>	<b>20</b>	<b>22</b>	<b>46</b>	<b>26</b>	<b>20</b>

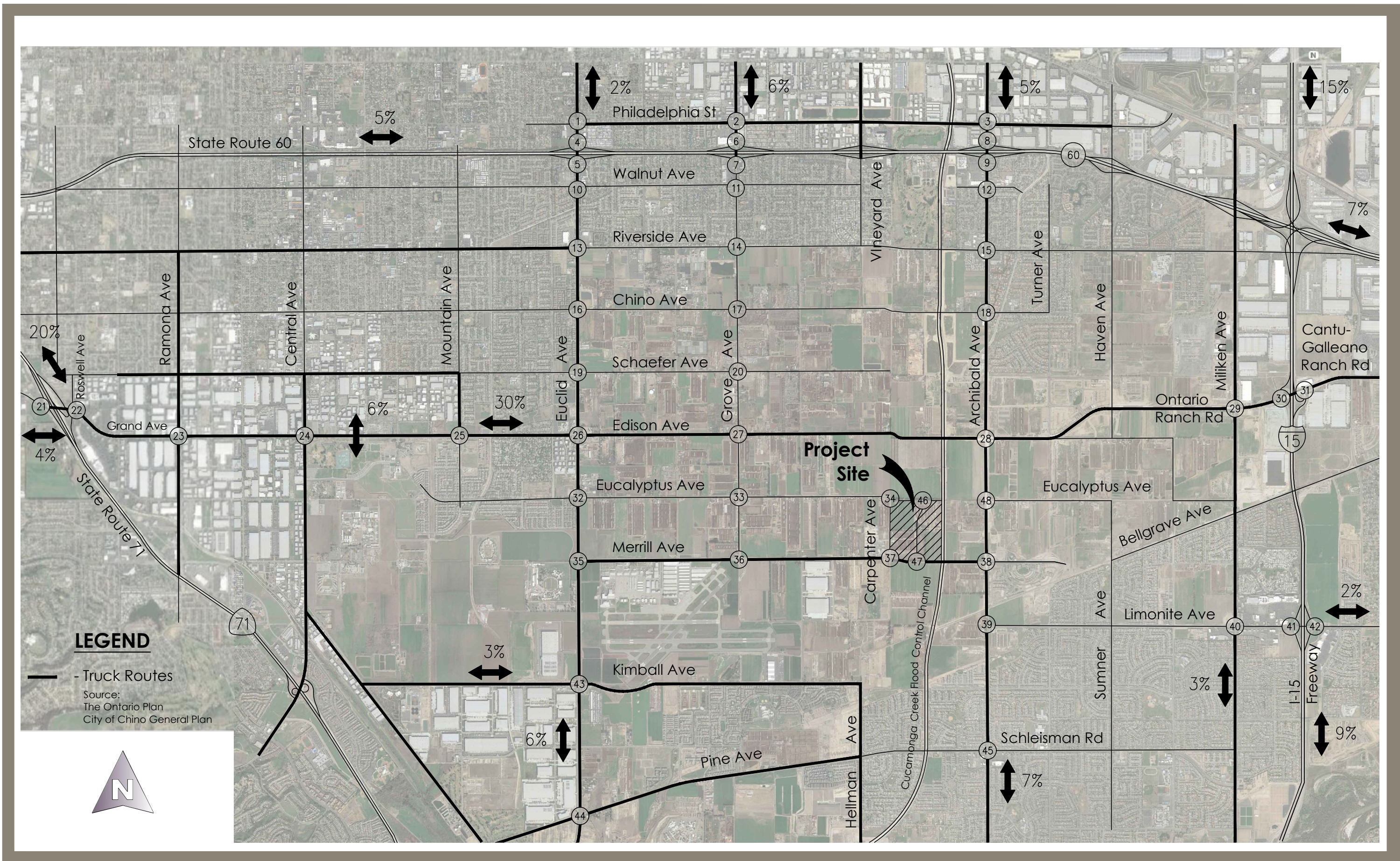
**Project TRUCK Trips PCE**

<b>Total</b>	<b>2,686</b>	<b>108</b>	<b>52</b>	<b>56</b>	<b>118</b>	<b>66</b>	<b>52</b>
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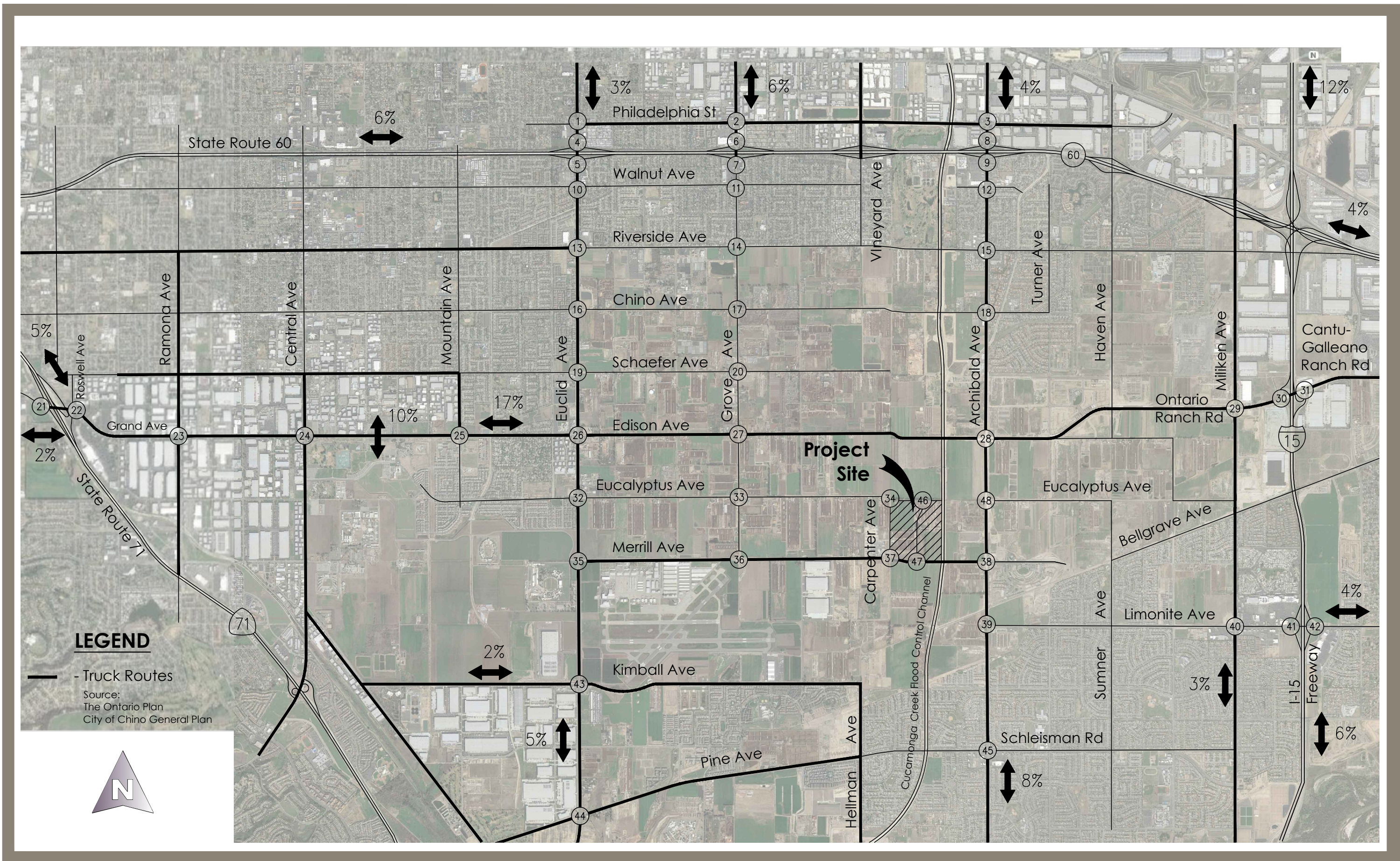




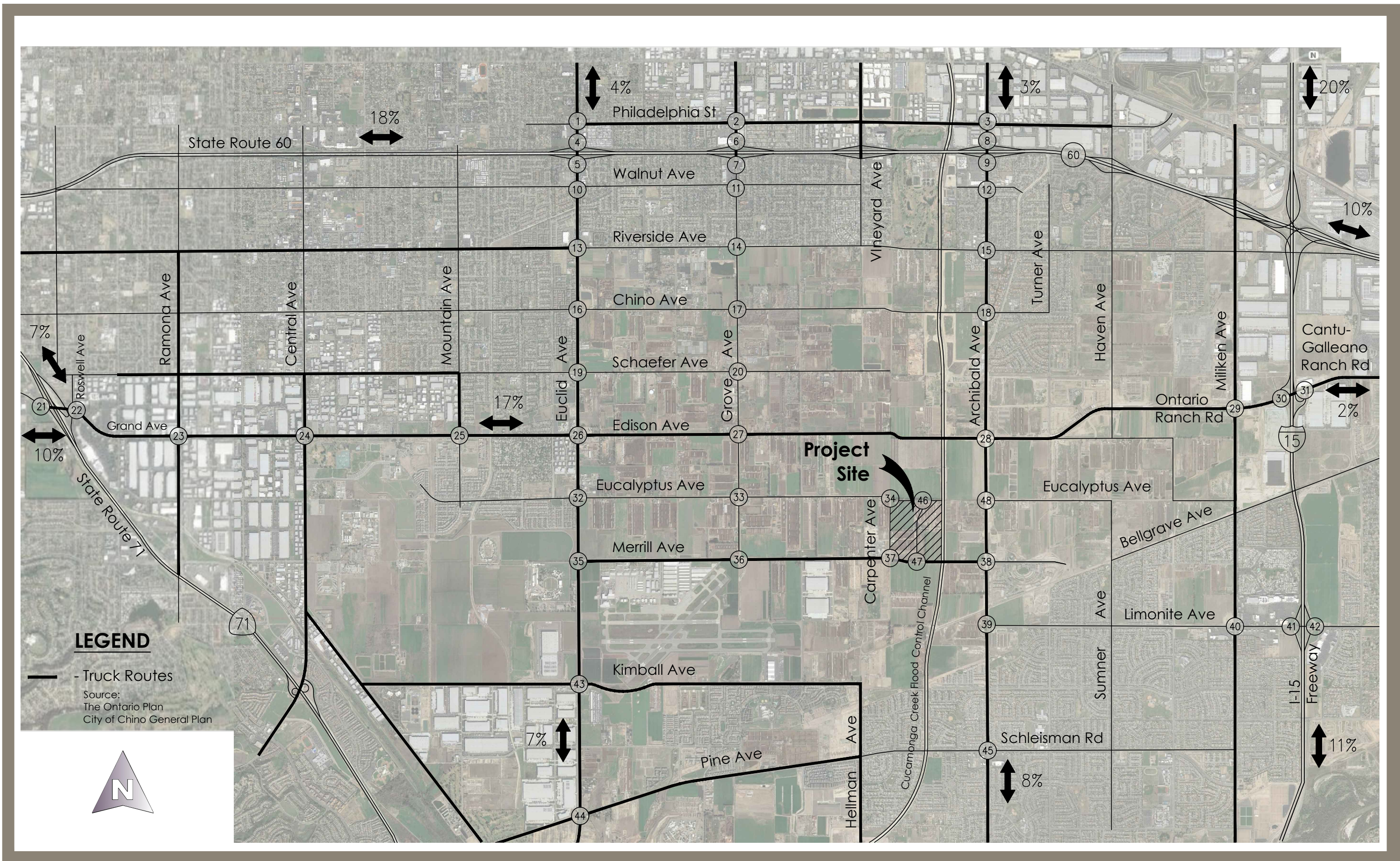




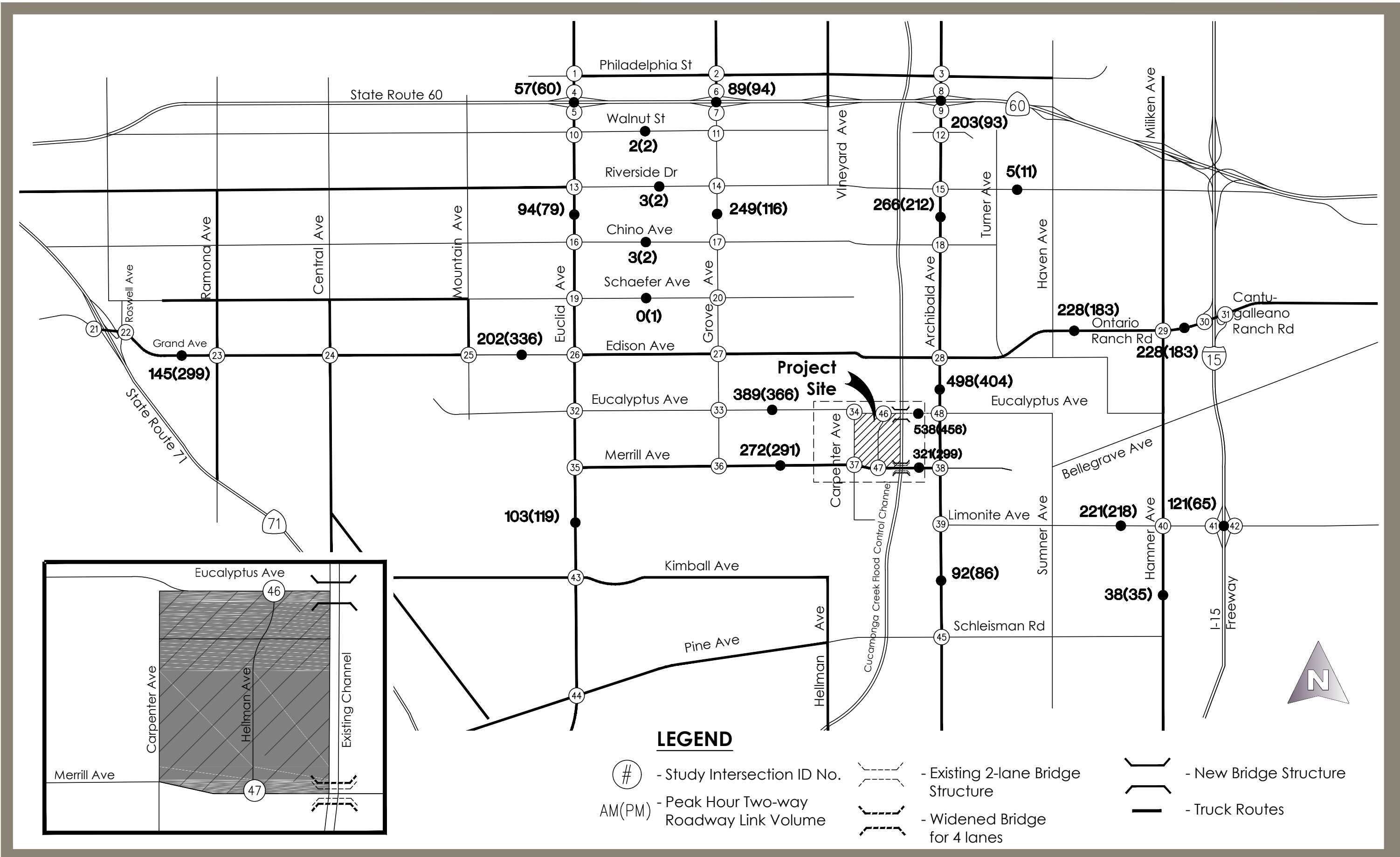


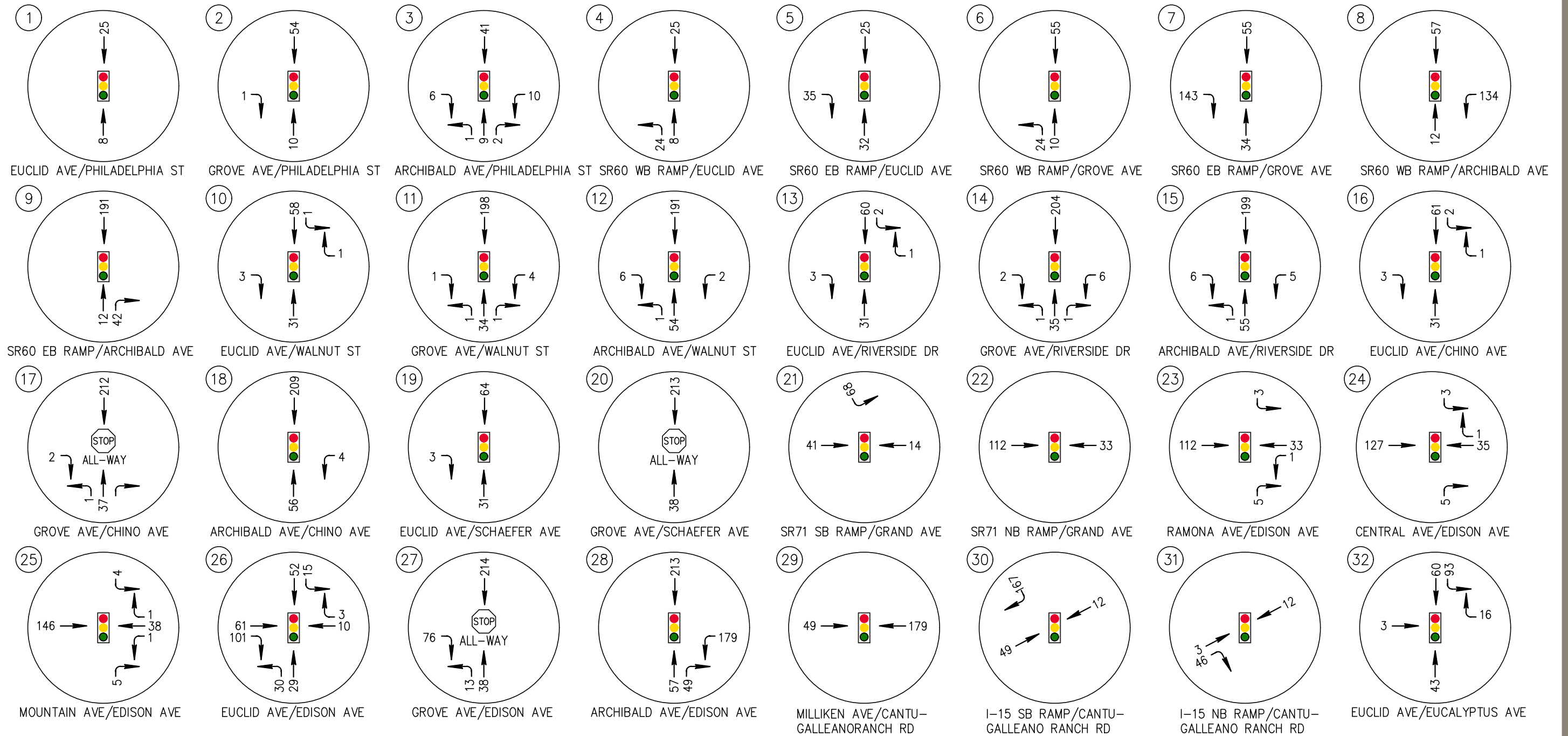






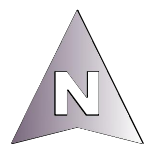


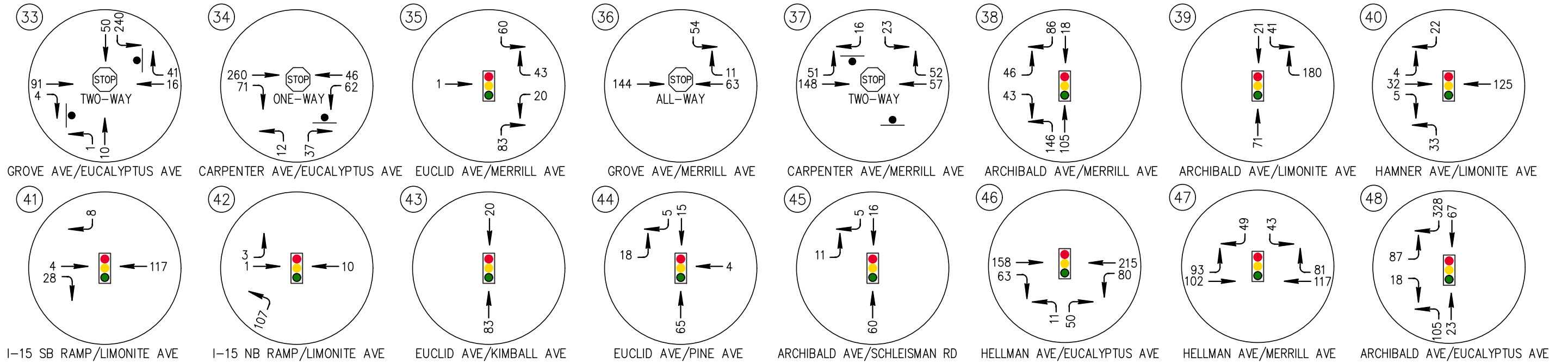




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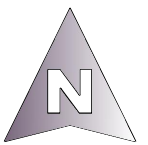
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 179 - Peak Hour Volume for Movement Indicated
- Signalized Intersection

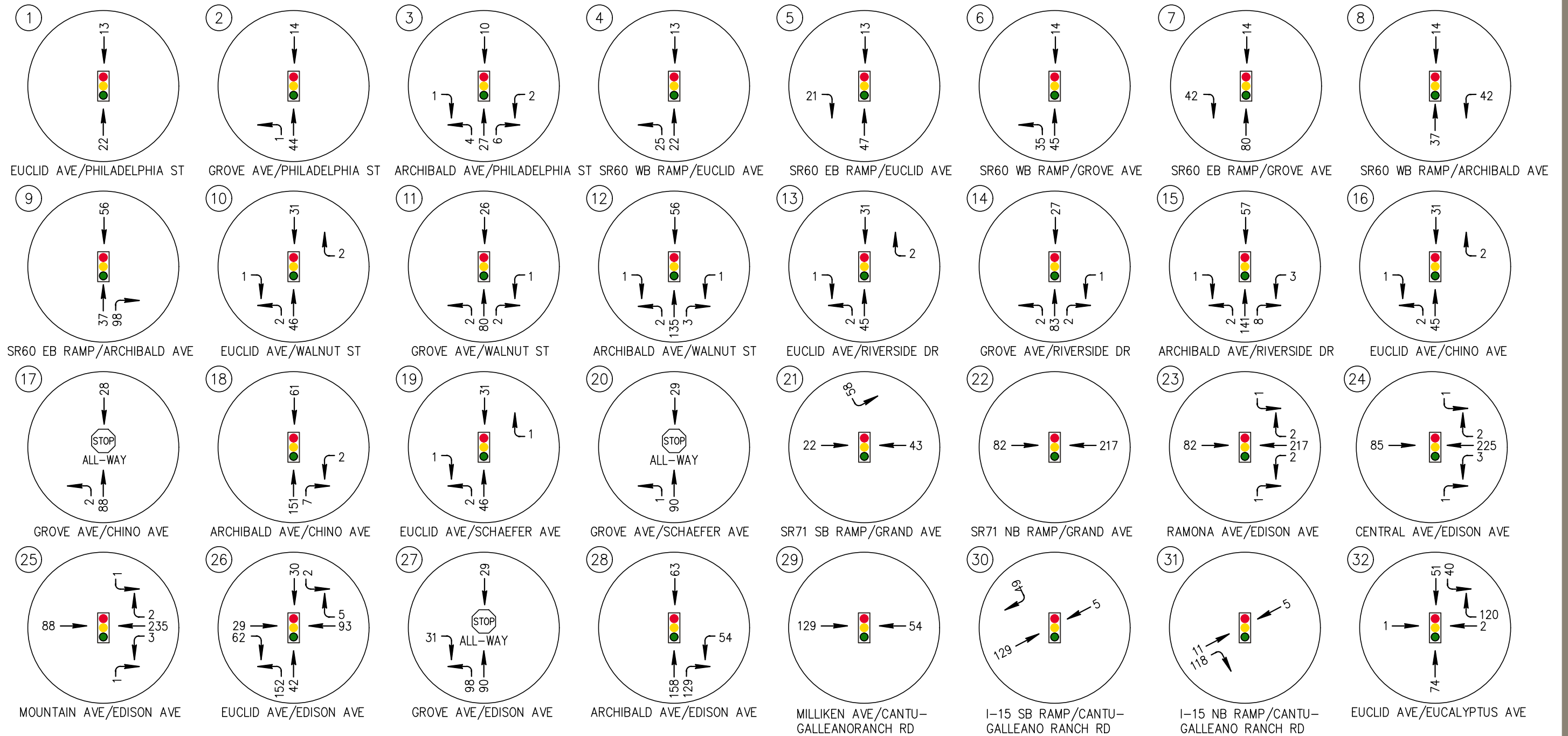




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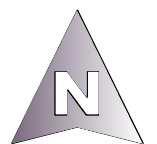
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- Signalized Intersection
- 10 - Peak Hour Volume for Movement Indicated

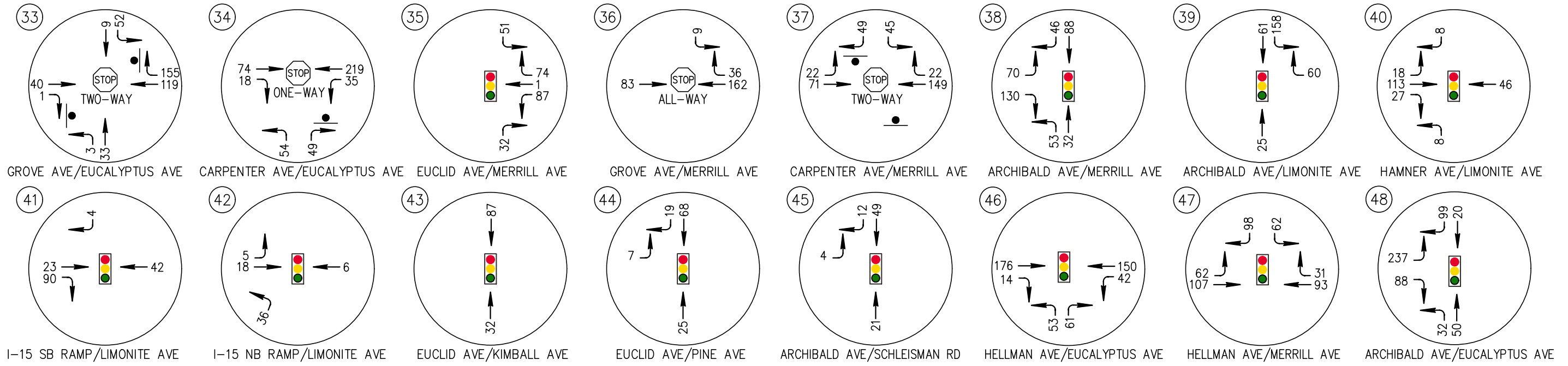




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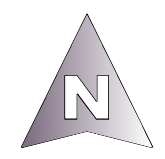
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- Signalized Intersection
- 25 - Peak Hour Volume for Movement Indicated

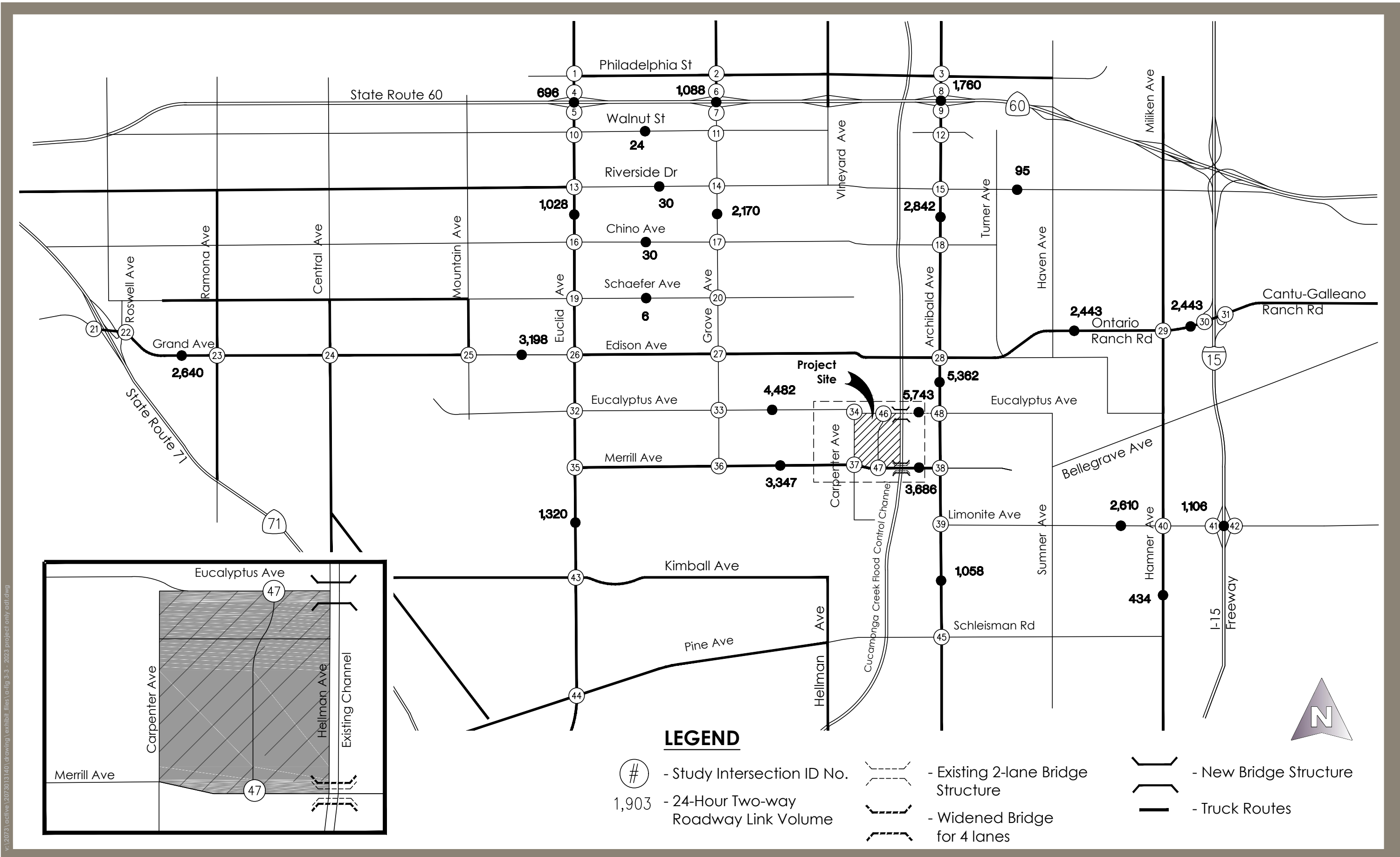




**LEGEND**

- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- TL - Signalized Intersection
- 21 - Peak Hour Volume for Movement Indicated







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### 3.3. EXISTING YEAR (2017) WITH PROJECT TRAFFIC VOLUME FORECASTS

To develop forecasts for this scenario, project only traffic volumes were combined with existing (2017) volumes to develop Existing (2017) with project traffic volume forecasts.

Figure 3-4A provides Existing (2017) with Project am and pm peak hour two-way roadway link volumes on study area roadway segments. Figures 3-4B through 3-4E show Existing with Project weekday am and pm peak hour intersection turning movement volumes at study area intersections. Figure 3-5 shows Existing with Project weekday 24-hour volumes on roadway segments and volume-to-capacity (v/c) ratios.

### 3.4. OPENING YEAR 2023 WITH PROJECT TRAFFIC VOLUME FORECASTS

To develop forecasts for this scenario, project only traffic volumes were combined with existing and cumulative project volumes associated with projects to be developed in or prior to 2023, to develop total Opening Year 2023 with project traffic volume forecasts.

#### 3.4.1. Opening Year 2023 with Project Traffic Volumes

Figure 3-6A provides Opening Year 2023 with Project am and pm peak hour two-way roadway link volumes on study area roadway segments. Figures 3-6B through 3-6E show Opening Year 2023 with Project weekday am and pm peak hour intersection turning movement volumes at study area intersections. Figure 3-7 shows Opening Year 2023 with Project weekday 24-hour volumes on roadway segments and volume-to-capacity (v/c) ratios.

### 3.5. HORIZON YEAR 2040 WITH PROJECT TRAFFIC VOLUME FORECASTS

Horizon Year 2040 traffic forecasts were derived from regional SBTAM model output of future daily volumes and were post-processed/refined as appropriate to develop am/pm peak hour 2040 turning movement volumes. This process typically involved

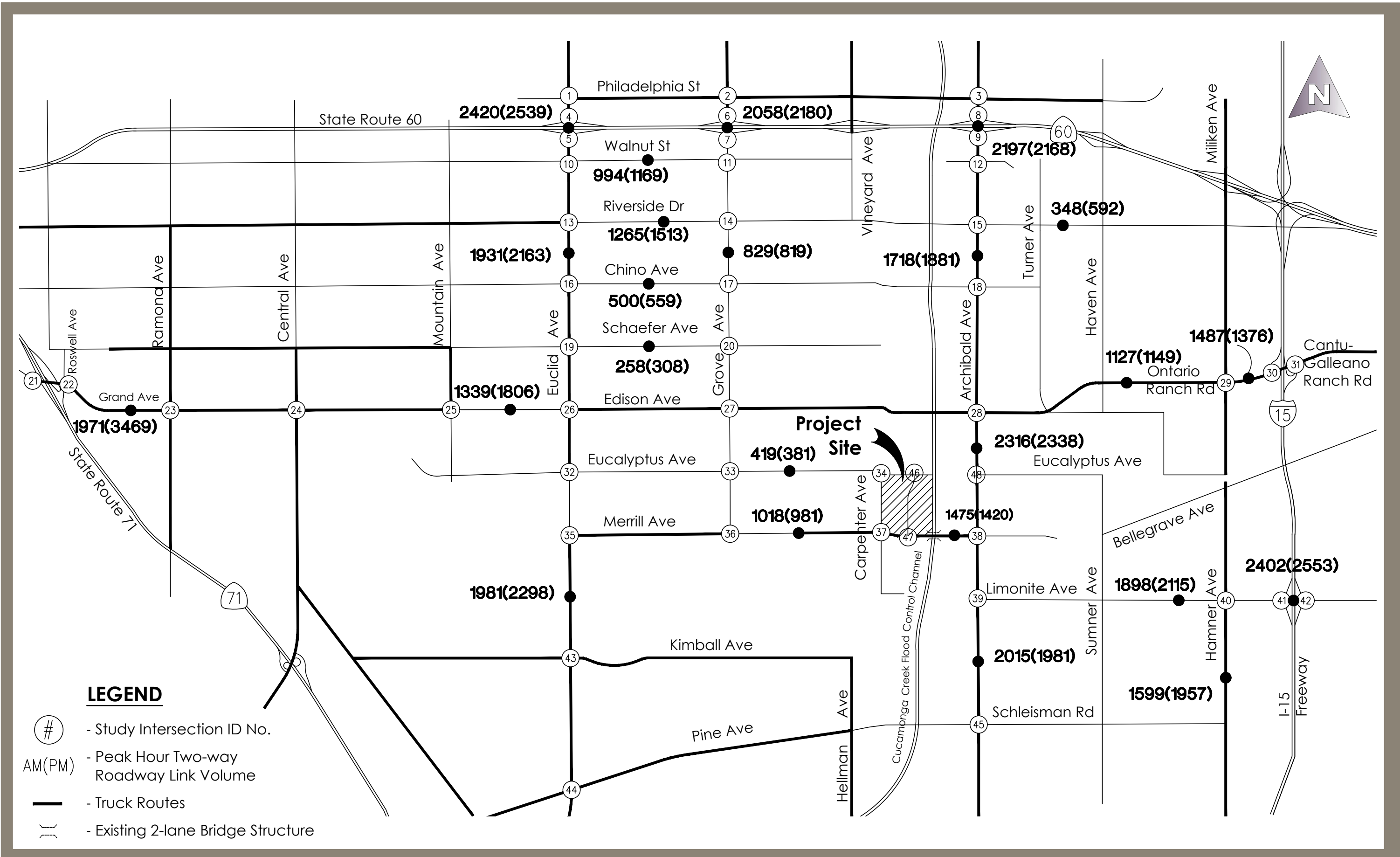
March 2018

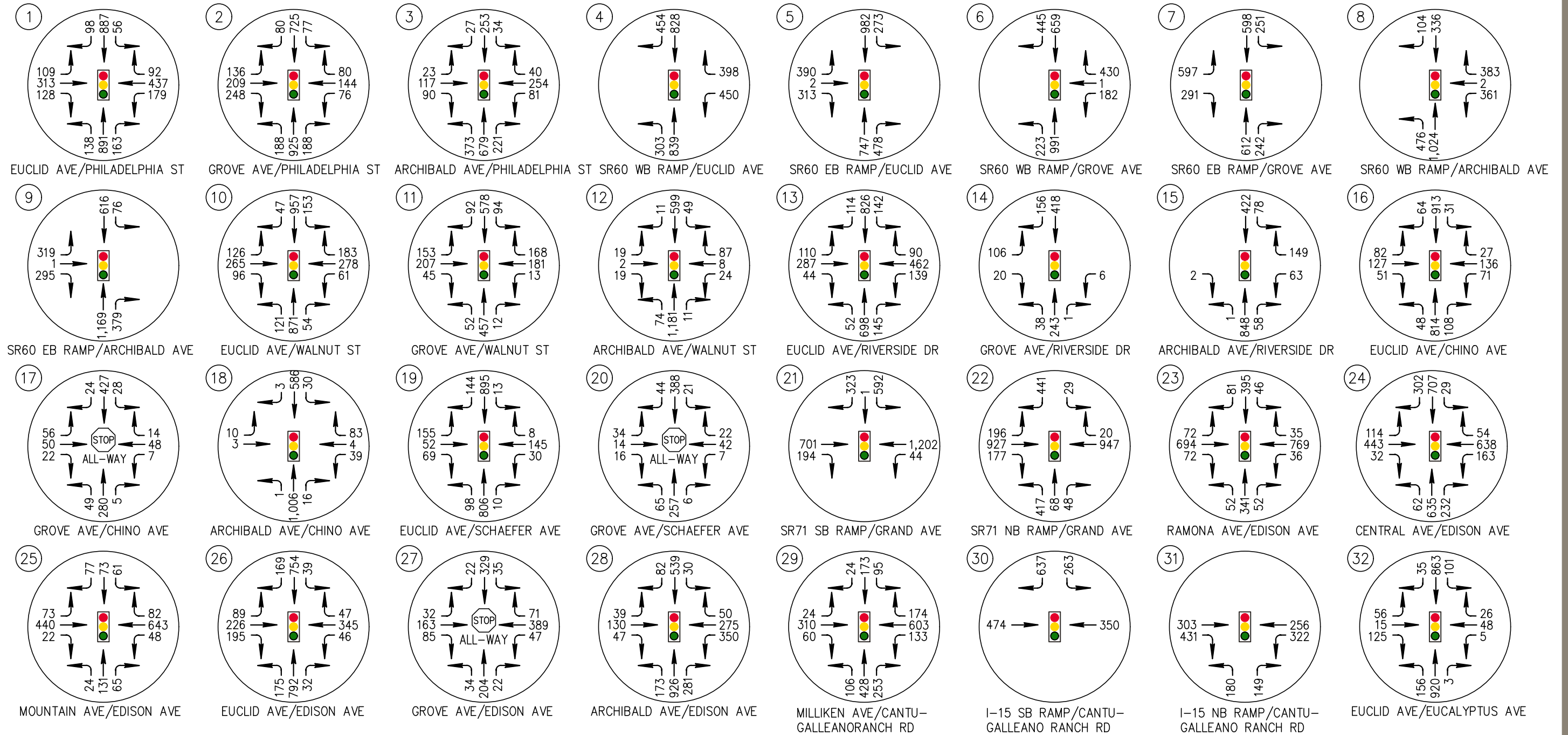
---

using the existing counts (March 2017) as initial values and increasing the volumes to match the growth forecast by comparison with SBTAM daily 2040 volumes. Refinement also included techniques including calibration, balancing, conversion of flow, integration with the local network analysis model (PTV Vistro), and reasonableness checking. Reasonableness checking including comparison of forecast Horizon Year 2040 daily volumes identified in this study with those in the recently prepared traffic impact analysis for the Colony Commerce Center East Specific Plan, November 2, 2017. The Horizon Year 2040 forecasts typically vary by 5-6% or less and no more than 10%.

### 3.5.1. Horizon Year 2040 with Project Traffic Volumes

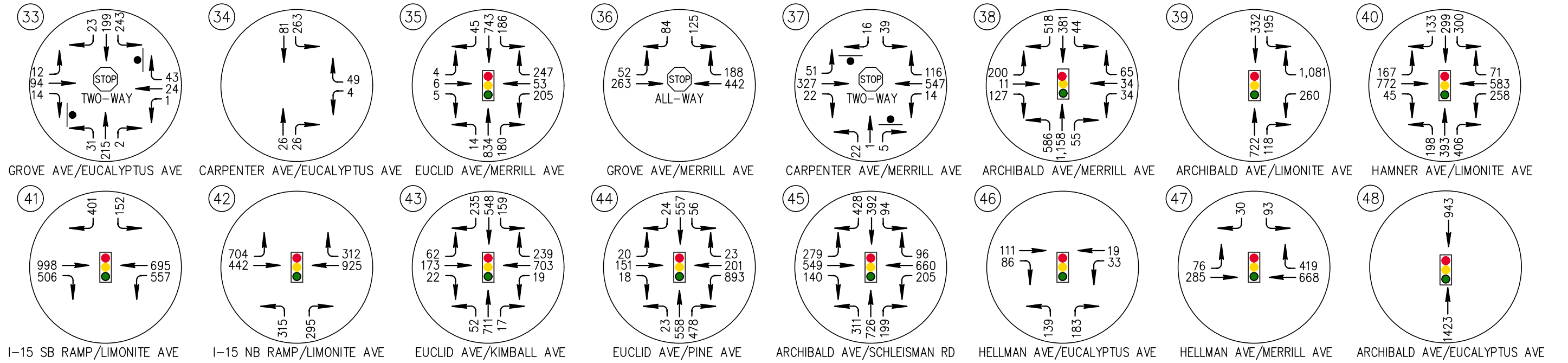
Forecast Horizon Year 2040 with Project am and pm peak hour two-way roadway link volumes are shown on Figure 3-8A. Figures 3-8B through 3-8E show Horizon Year 2040 with Project weekday am and pm peak hour intersection turning movement volumes at study area intersections. Figure 3-9 shows Horizon Year 2040 with Project weekday 24-hour volumes on roadway segments and volume-to-capacity (v/c) ratios.





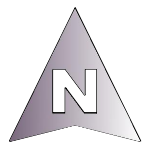
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- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 338 - Peak Hour Volume for Movement Indicated
- Signalized Intersection

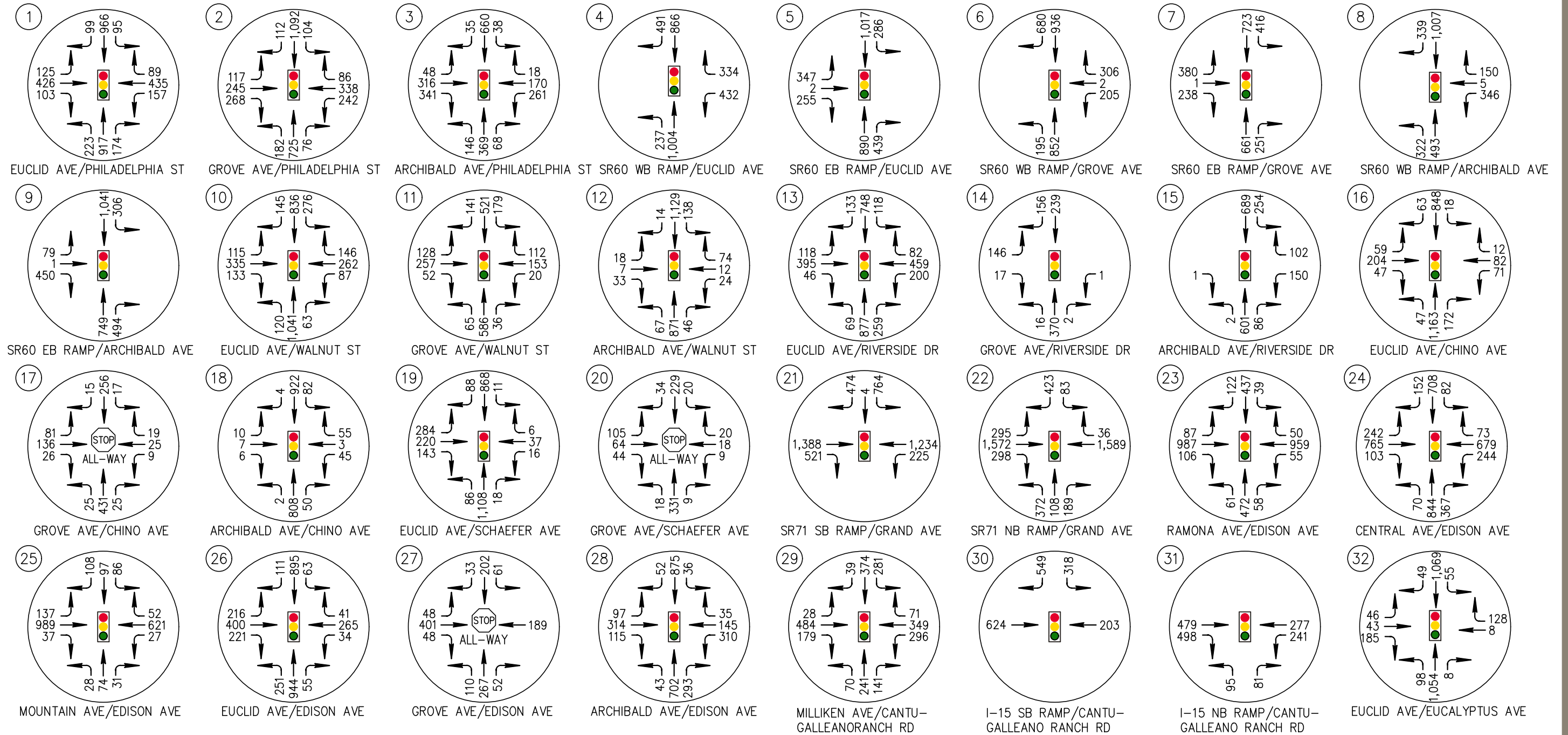


**LEGEND**

- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 660 - Peak Hour Volume for Movement Indicated
- Signalized Intersection

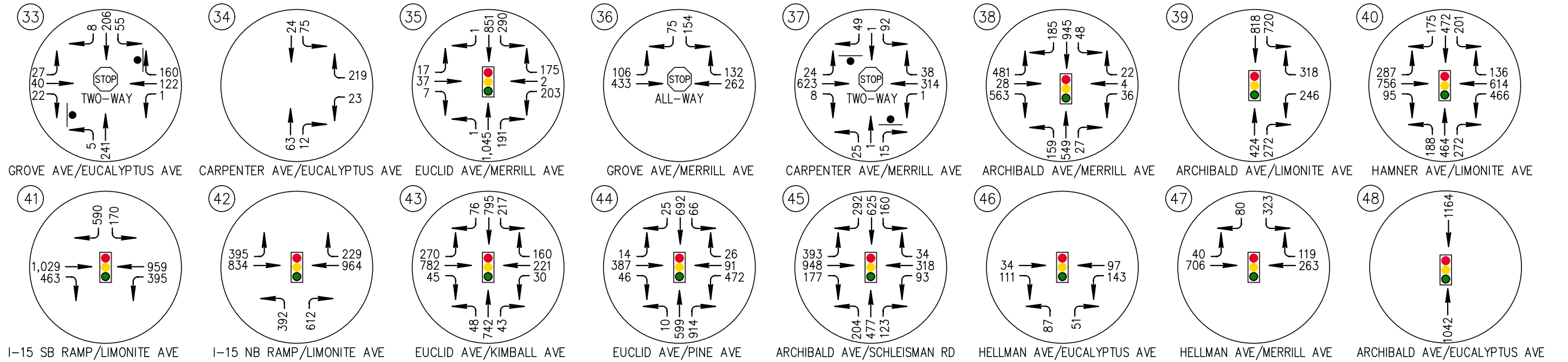






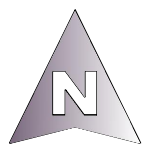
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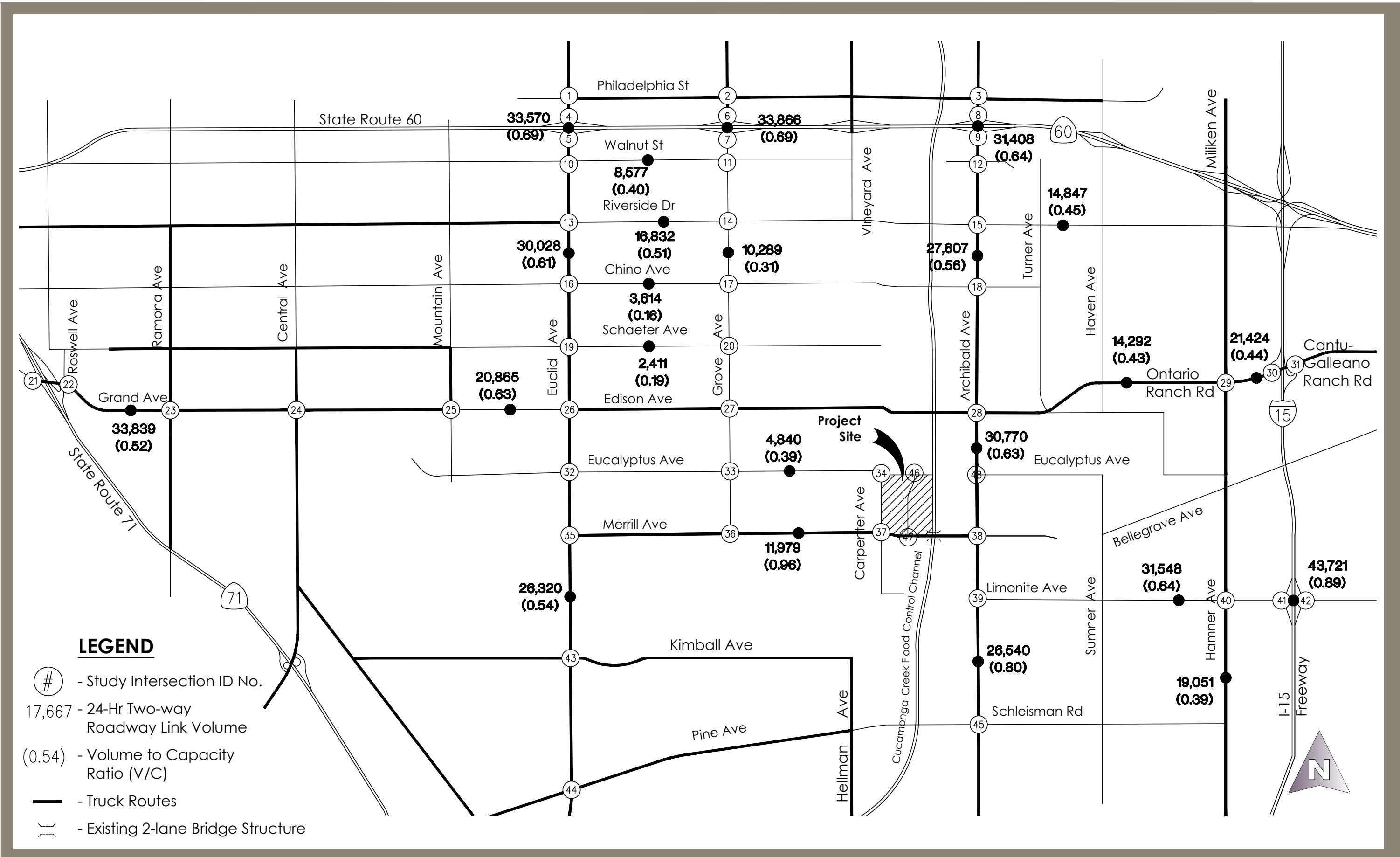
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- TL - Signalized Intersection
- 295 - Peak Hour Volume for Movement Indicated



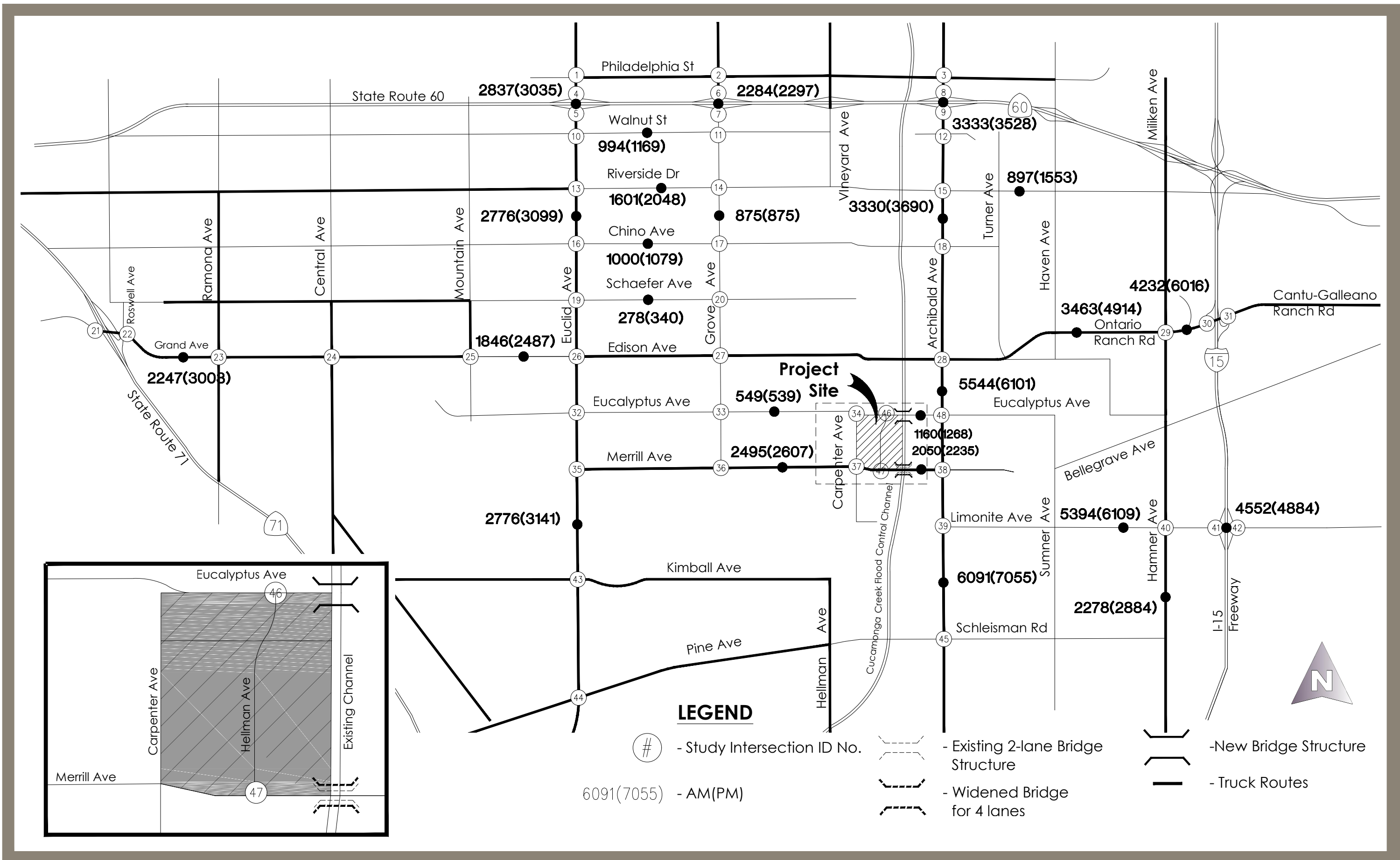
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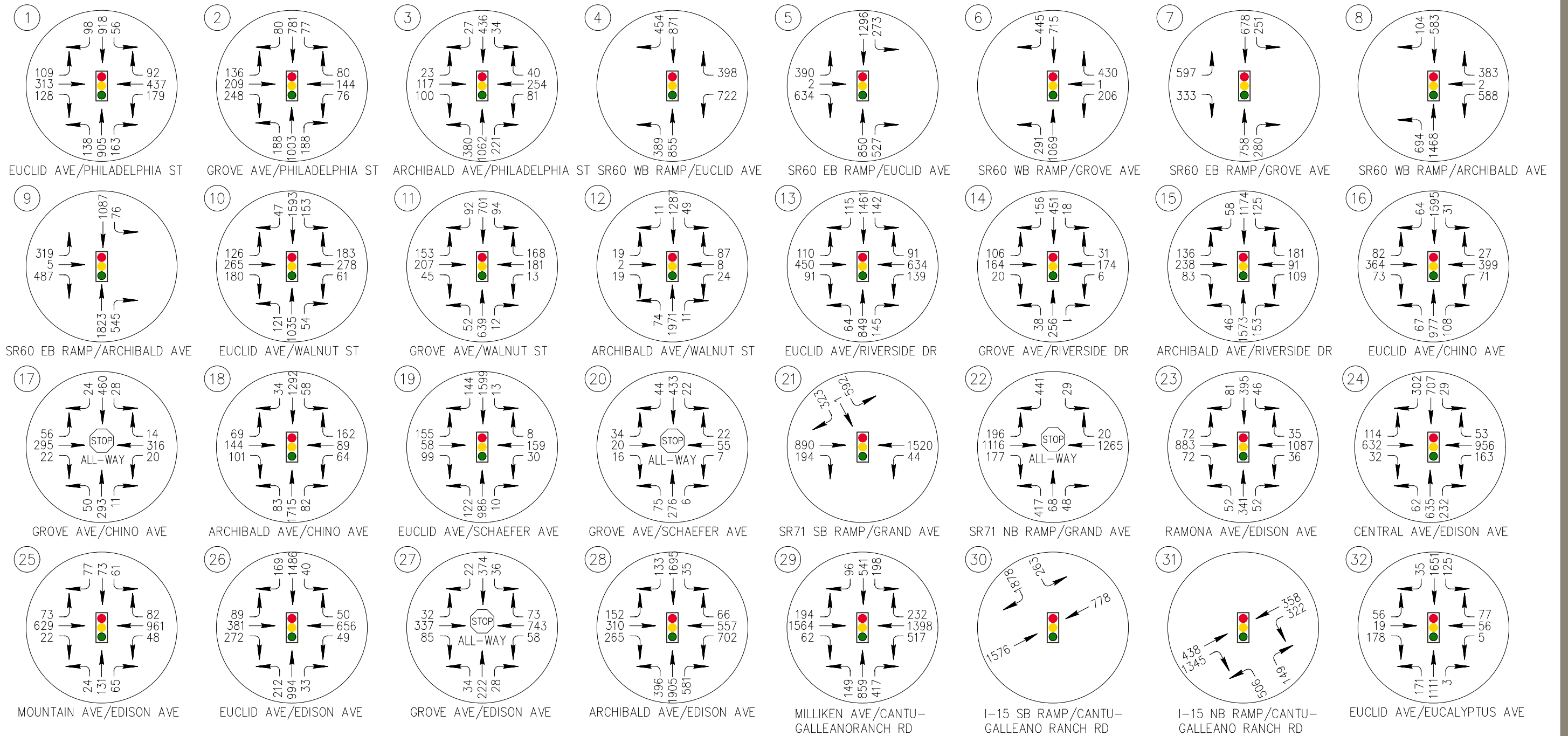
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 318 - Peak Hour Volume for Movement Indicated
- ◫ - Signalized Intersection







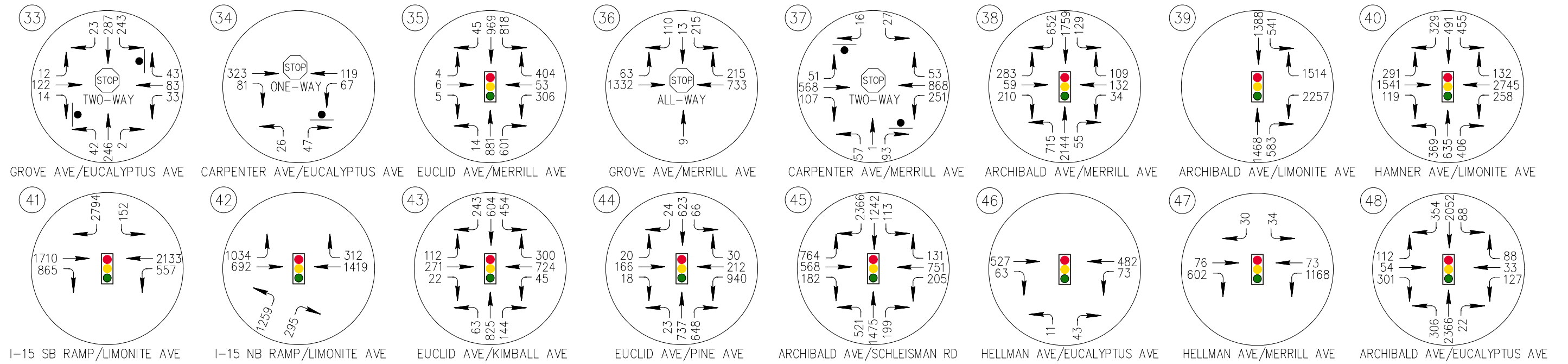




**LEGEND**

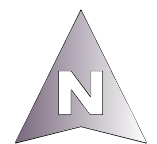
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- Signalized Intersection Symbol - Signalized Intersection
- 1576 - Peak Hour Volume for Movement Indicated

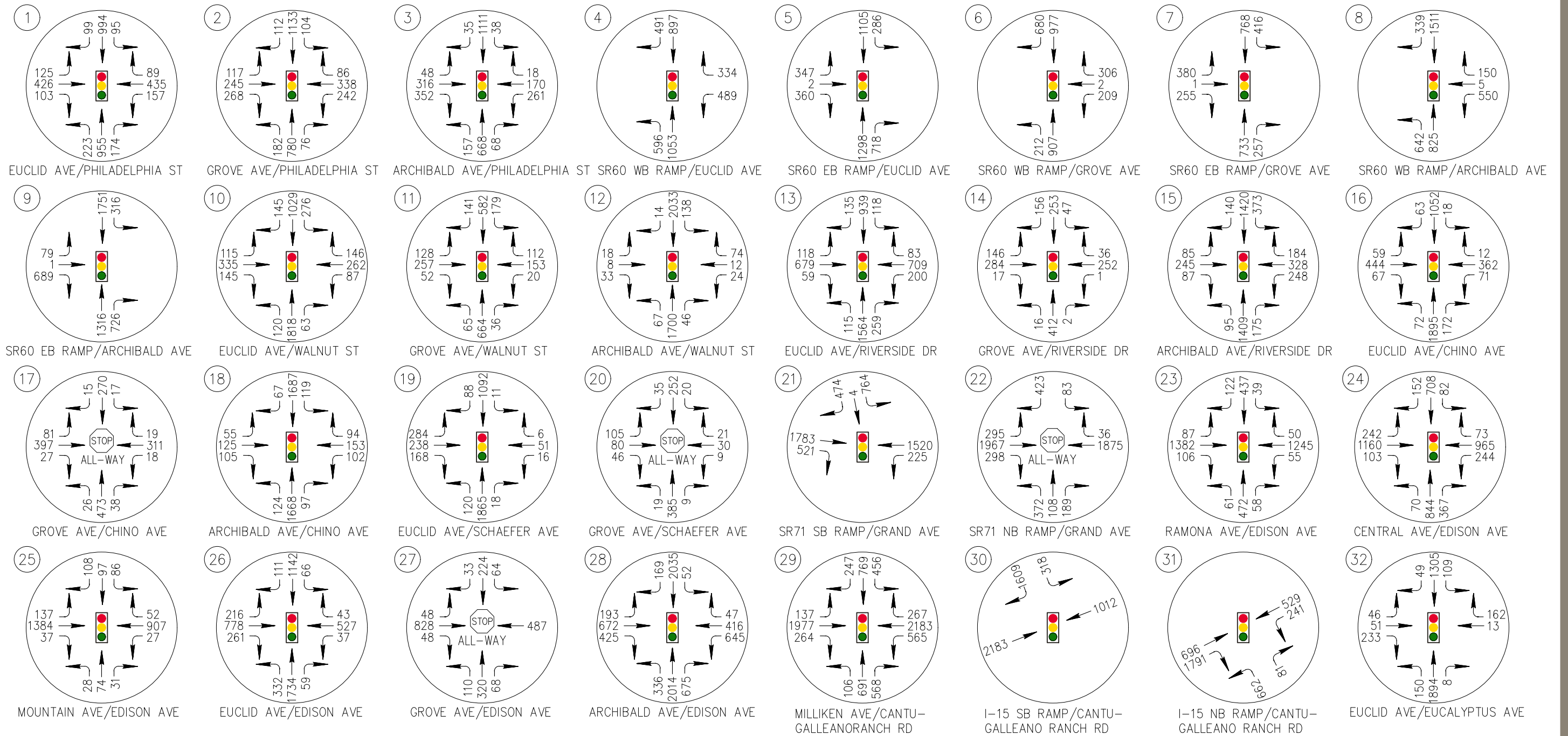




**LEGEND**

- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- TL - Signalized Intersection
- 521 - Peak Hour Volume for Movement Indicated

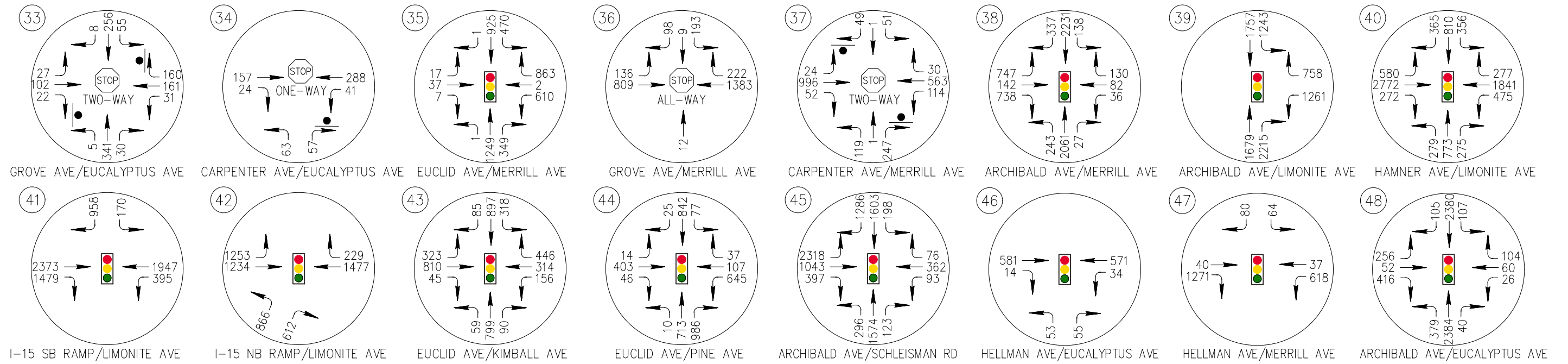




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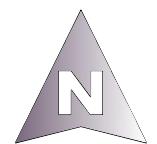
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- Signalized Intersection Symbol - Signalized Intersection
- 2183 - Peak Hour Volume for Movement Indicated



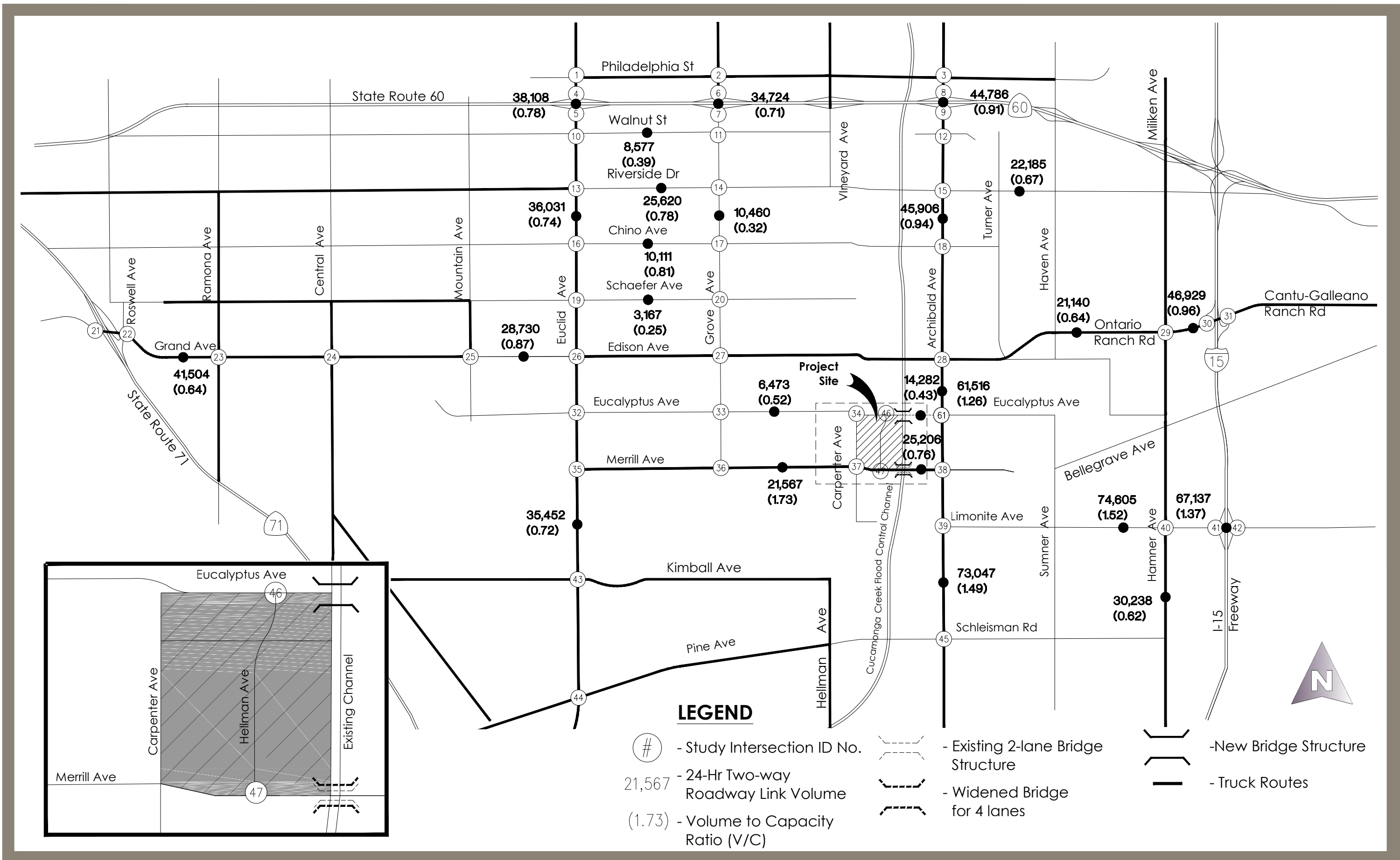


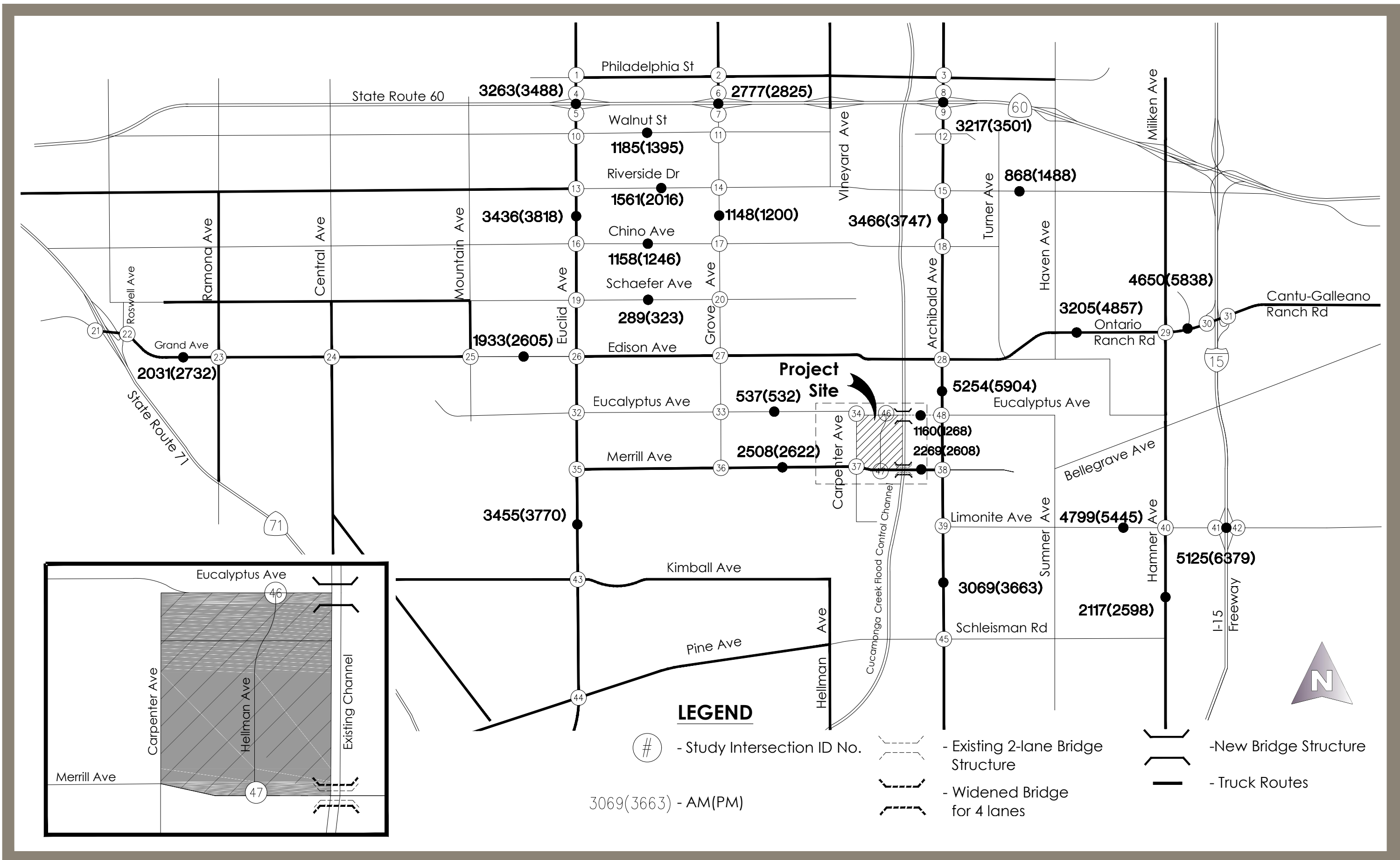
**LEGEND**

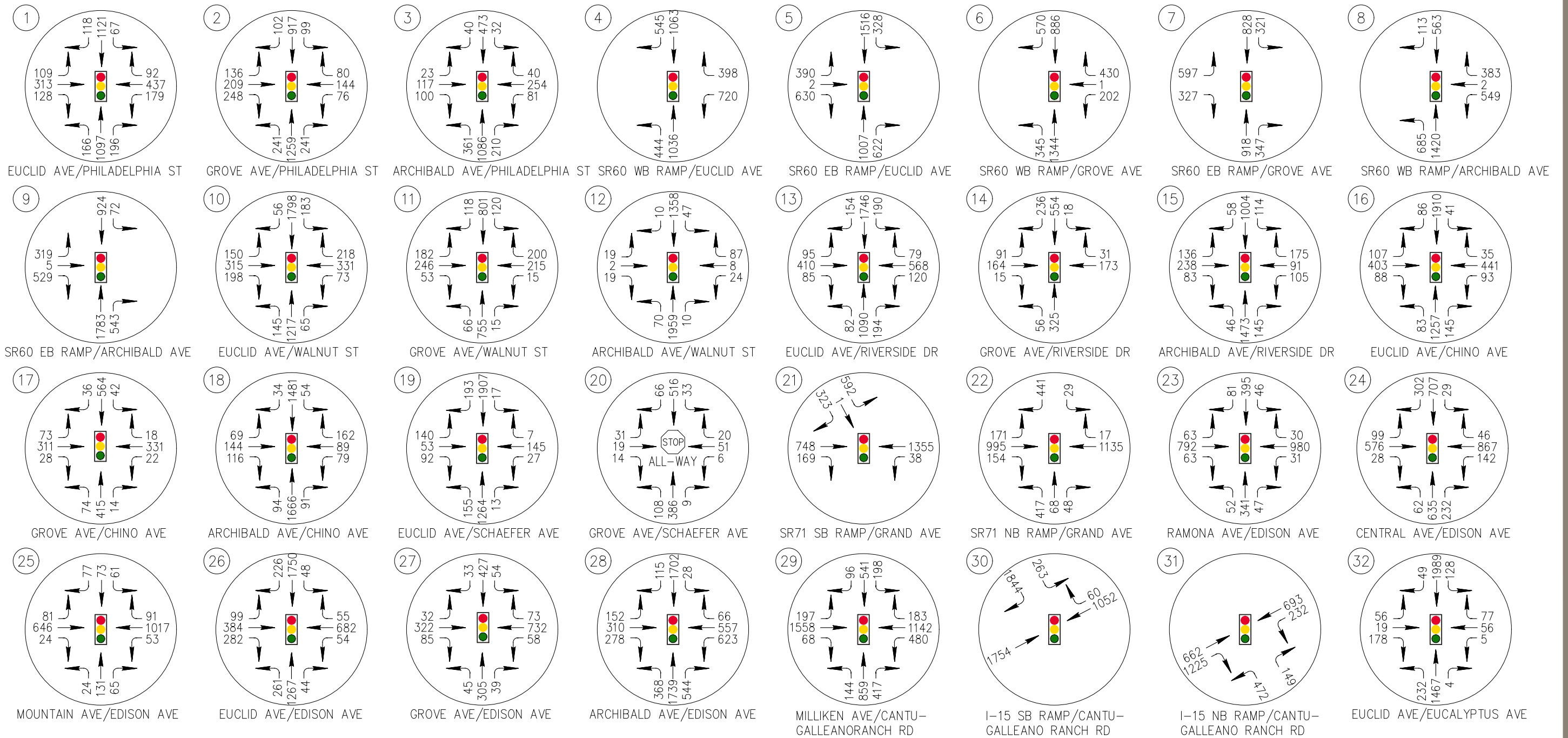
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- Signalized Intersection
- 53 - Peak Hour Volume for Movement Indicated





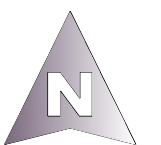




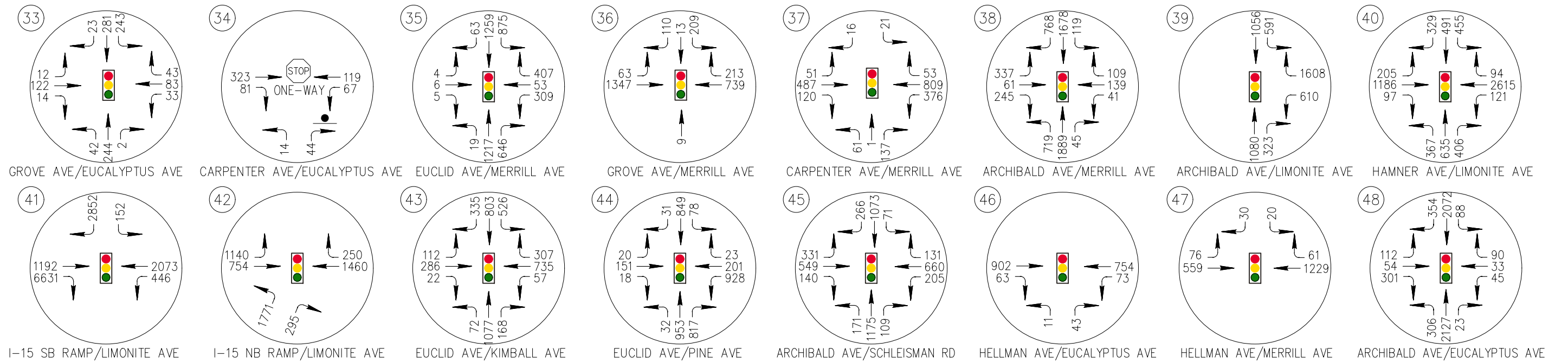


**LEGEND**

- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 144 - Peak Hour Volume for Movement Indicated
- Signalized Intersection

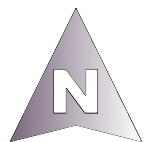


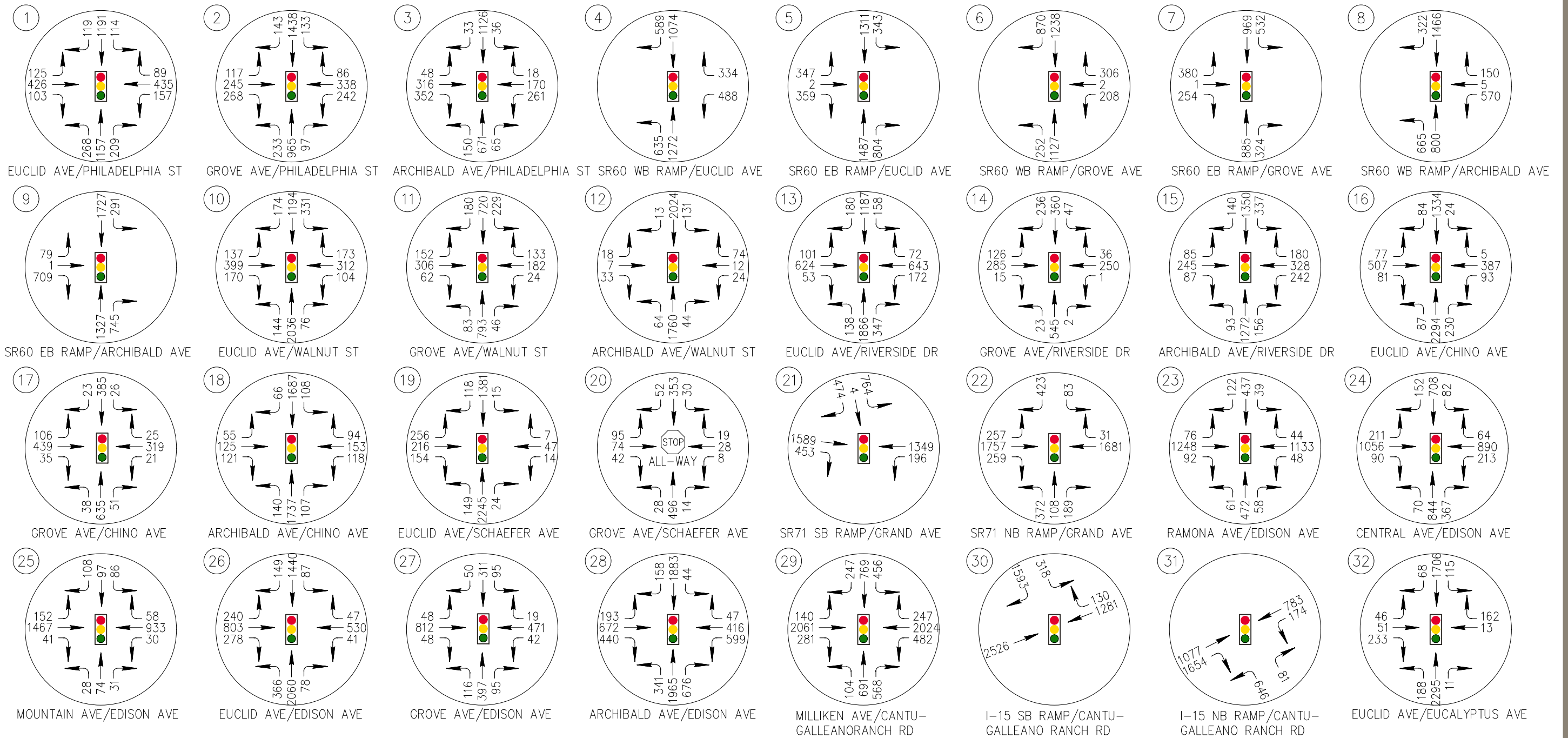




**LEGEND**

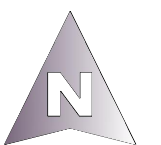
- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 171 - Peak Hour Volume for Movement Indicated
- Signalized Intersection



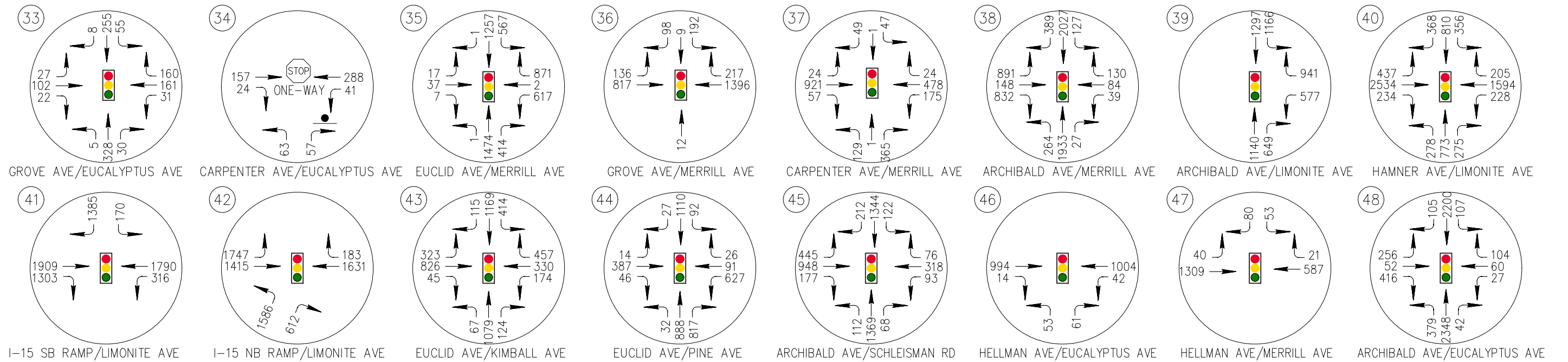


**LEGEND**

- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 104 - Peak Hour Volume for Movement Indicated
- ◫ - Signalized Intersection

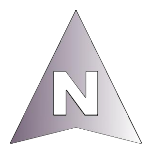


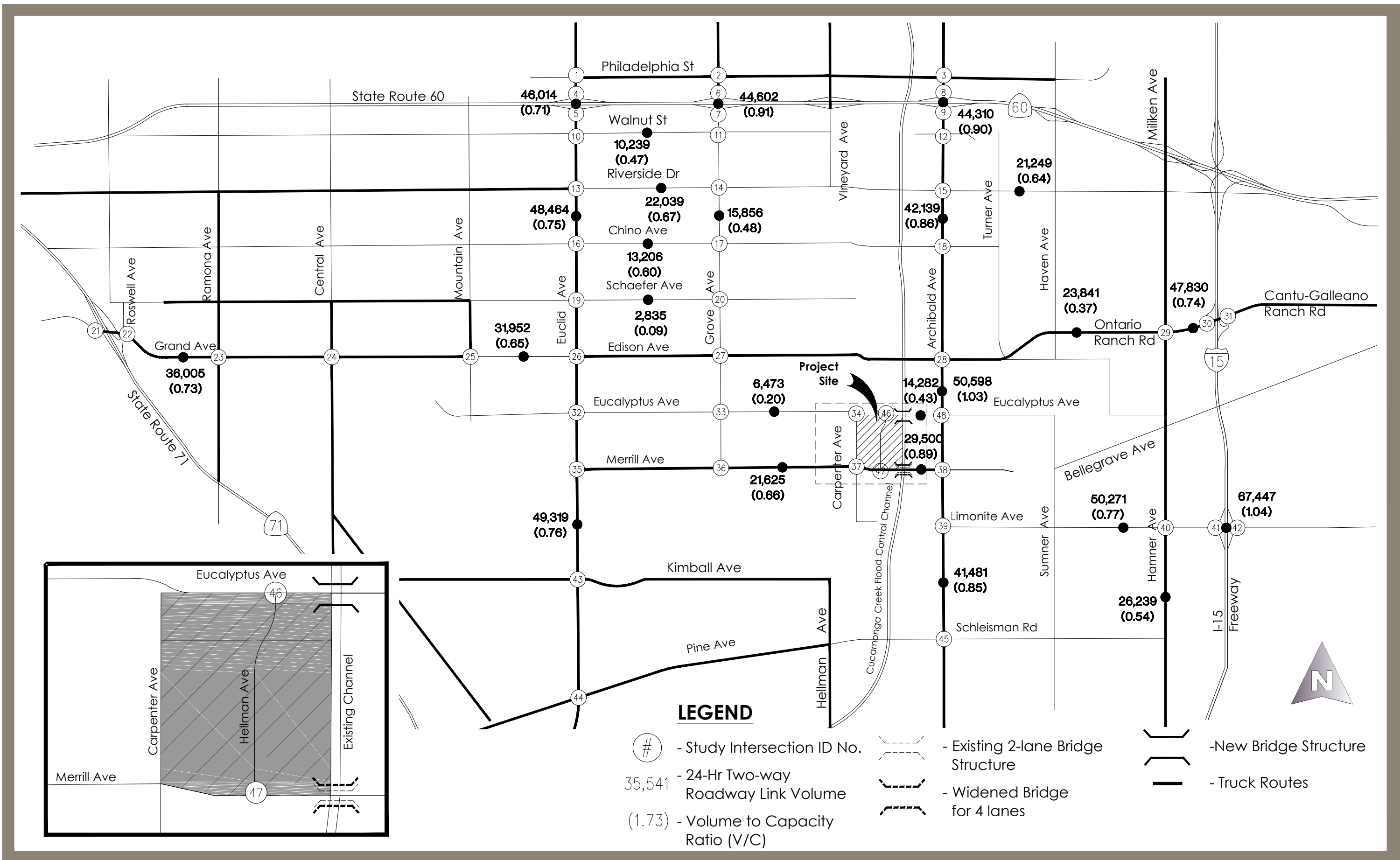
**Figure 3-8D**



**LEGEND**

- # - Study Intersection ID No.
- - Stop-Controlled Approach
- STOP - Stop-Controlled Intersection
- 112 - Peak Hour Volume for Movement Indicated
- Signalized Intersection





**SECTION 4.0 ROADWAY TRAFFIC ANALYSIS**

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**4.1. EXISTING (2017), OPENING YEAR 2023, AND HORIZON YEAR 2040 WITH PROJECT TRAFFIC CONDITIONS**

Existing (2017), Opening Year 2023, and Horizon Year 2040 with Project traffic volumes as shown on Figures 3-4A through 3-9 were analyzed considering the respective roadway networks for each scenario to confirm provided LOS. Roadway segment LOS was determined based on volume-to-capacity (v/c) analysis using City General Plan capacities for each roadway type. Intersection LOS was determined using the 2010 Highway Capacity Manual (HCM) signalized/unsignalized operational methods. The target level of service to be maintained throughout the project study area has been established by the City as Level of Service D for roadways and Level of Service E for intersections within the City of Ontario.

**4.1.1. Existing (2017) with Project Traffic Conditions**

For this scenario, Existing with Project traffic volume forecasts shown on Figures 3-4A through 3-5 have been analyzed on the existing (2017) circulation network (Figures 2-1A through 2-1C). No off-site intersection or roadway improvements to the 2017 network have been considered. Project frontage and access improvements are included.

Table 4-1 shows intersection LOS analysis results for forecast Existing (2017) with Project conditions. Table 4-2 is an excerpt from Table 4-1 showing the one (1) intersection that is predicted to operate at LOS F in at least one peak hour:

A recommended intersection mitigation measure that will return this intersection to acceptable LOS is identified on Table 4-3. An analysis of the West Ontario Commerce Center Project fair share contribution to the estimated rough cost of this improvement is provided on Table 1-1 in the Executive Summary section of this study. With implementation of the identified project mitigation measure signalization, the LOS at

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Grove Avenue/Edison Avenue intersection will provide acceptable LOS as shown on Table 4-3. This offsite mitigation improvement is shown on Figures 4-1A through 4-1C together with the project access improvements at adjacent intersections. Table 1-2 provided in the Executive Summary section identifies the West Ontario Commerce Center Project fair share percentage towards providing signalization at the Grove Avenue/Euclid Avenue intersection.

Figure 3-5 shows that study area roadway segments will typically have volume-to-capacity ratios of 0.90 or below indicating LOS D or better operation based on Existing (2017) with Project 24-hour volumes.

#### 4.1.2. Opening Year 2023 with Project Traffic Conditions

For this scenario, Opening Year 2023 with Project traffic volume forecasts shown on figures 3-6A through 3-7 have been analyzed on the Opening Year (2023) circulation network (Figures 2-9A through 2-9C). This network reflects the intersection improvements listed on Table 2-4 associated with cumulative development projects identified for inclusion in this study. No other roadway or intersection improvements are considered for the 2023 network. Project frontage and access improvements are included.

Table 4-4 shows cumulative project impact for forecast Opening Year 2023 with Project conditions. This table shows that with cumulative project impacts including the West Ontario Commerce Center (WOCC) Project, fourteen (14) study area intersections are predicted to operate at unacceptable LOS. Table 4-4 also shows that the WOCC Project has a significant cumulative impact at each intersection and these intersections are summarized in Table 4-5.

Table 4-6 identifies recommended mitigation improvements for each of the intersections predicted to have deficient LOS under forecast Opening Year 2023 with Project peak hour conditions. The recommended mitigation improvements listed in Table 4-6 are shown on Figures 4-2A through 4-2C. The Project fair share contribution to



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the estimated rough cost of each improvement is provided on Table 1-1 in the Executive Summary section of this study.

The Project roadway infrastructure improvements will include all frontage improvements as included in the Specific Plan including a fair share contribution (60.21%) toward construction of the ultimate Eucalyptus Avenue bridge structure over the Cucamonga Flood Control Channel which was included in analysis of this scenario. The fair share contribution percentage toward the construction of Eucalyptus Avenue bridge structure is calculated by dividing the sum of estimated AM and PM peak hour bridge traffic generated by the Project by the total sum of AM and PM peak hour bridge traffic generated by all of the cumulative project traffic including the West Ontario Commerce Center project. It is assumed that completion of the ultimate bridge structure will be coordinated with the adjacent Parkside and Subarea 29 developments to complete ultimate improvements to Eucalyptus Avenue between the channel and the Archibald Avenue intersection.

#### 4.1.3. Horizon Year 2040 with Project

This scenario analyzes Horizon Year 2040 with Project traffic volume forecasts shown on Figures 3-8A through 3-9 on the Horizon Year 2040 circulation network. The Horizon Year 2040 circulation network roadway and intersection configurations are shown on Figures 4-3A through 4-3C. Table 4-7 shows that similar to Horizon Year 2040 No Project conditions, no deficient intersection LOS has been identified and no further mitigation improvements are indicated.

**Table 4-1  
Existing (2017) with Project Level of Service at Study Area Intersections**

Signalized Intersection	Existing (2017) No Project				Existing (2017) with Project				
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	
1	Euclid Ave / Philadelphia St	24.1	C	27.0	C	24.3	C	27.3	C
2	Grove Ave / Philadelphia St	18.0	B	22.6	C	18.0	B	20.2	C
3	Archibald Ave / Philadelphia St	16.8	B	19.7	B	16.7	B	19.6	B
4	SR60 WB Ramp / Euclid Ave	16.6	B	14.5	B	17.3	B	15.0	B
5	SR60 EB Ramp / Euclid Ave	16.5	B	15.5	B	17.2	B	15.9	B
6	SR60 WB Ramp / Grove Ave	17.2	B	17.4	B	17.5	B	17.9	B
7	SR60 EB Ramp / Grove Ave	24.8	C	21.6	C	24.9	C	23.6	C
8	SR60 WB Ramp / Archibald Ave	15.6	B	18.3	B	16.2	B	19.1	B
9	SR60 EB Ramp / Archibald Ave	13.5	B	19.9	B	13.1	B	23.0	C
10	Euclid Ave / Walnut St	15.6	B	16.6	B	15.7	B	16.7	B
11	Grove Ave / Walnut St	19.8	B	19.7	B	19.4	B	22.8	C
12	Archibald Ave / Walnut St	7.3	A	8.1	A	7.1	A	8.0	A
13	Euclid Ave / Riverside Dr	20.3	C	22.8	C	20.4	C	22.9	C
14	Grove Ave / Riverside Dr	21.6	C	22.6	C	20.2	C	21.2	C
15	Archibald Ave / Riverside Dr	11.9	B	14.6	B	11.2	B	14.3	B
16	Euclid Ave / Chino Ave	12.2	B	13.0	B	12.4	B	13.2	B
18	Archibald Ave / Chino Ave	8.1	A	8.6	A	7.9	A	8.5	A
19	Euclid Ave / Schaefer Ave	16.1	B	17.5	B	16.2	B	17.7	B
21	SR71 SB Ramp / Grand Ave	12.1	B	37.3	D	12.4	B	38.4	D
22	SR71 NB Ramp / Grand Ave	42.6	D	63.2	E	42.8	D	76.8	E
23	Ramona Ave / Edison Ave	19.2	B	21.3	C	19.3	B	23.2	C
24	Central Ave / Edison Ave	22.7	C	27.9	C	22.8	C	30.8	C
25	Mountain Ave / Edison Ave	16.0	B	15.1	B	15.4	B	14.7	B
26	Euclid Ave / Edison Ave	15.0	B	15.6	B	16.1	B	20.3	C
28	Archibald Ave / Edison Ave	18.8	B	18.2	B	18.9	B	18.3	B
29	Milliken Ave / Cantu-Galleano Ranch Rd	32.8	C	33.7	C	23.6	C	45.4	D
30	I-15 SB Ramp / Cantu- Galleano Ranch Rd	10.0	A	9.8	A	13.8	B	12.3	B
31	I-15 NB Ramp / Cantu- Galleano Ranch Rd	6.3	A	4.0	A	6.1	A	3.8	A
32	Euclid Ave / Eucalyptus Ave	9.8	A	10.1	B	10.8	B	11.6	B
35	Euclid Ave / Merrill Ave	15.8	B	13.7	B	19.2	B	20.1	C
38	Archibald Ave / Merrill Ave	17.2	B	23.1	C	44.6	D	59.2	E
39	Archibald Ave / Limonite Ave	40.0	D	18.3	B	76.6	E	21.8	C
40	Hamner Ave / Limonite Ave	23.9	C	23.6	C	24.2	C	23.8	C
41	I-15 SB Ramp / Limonite Ave	17.3	B	15.8	B	16.9	B	16.5	B
42	I-15 NB Ramp / Limonite Ave	19.1	B	17.1	B	19.5	B	17.4	B
43	Euclid Ave / Kimball Ave	30.5	C	30.7	C	32.2	C	31.5	C
44	Euclid Ave / Pine Ave	23.9	C	43.1	D	24.2	C	47.0	D
45	Archibald Ave / Schleisman Rd	23.0	C	21.9	C	23.0	C	21.8	C
46	Hellman Ave / Eucalyptus Ave	-	-	-	-	10.4	B	9.8	A
47	Hellman Ave / Merrill Ave	-	-	-	-	12.7	B	17.2	B
48	Archibald Ave / Eucalyptus Ave	5.0	A	3.4	A	5.0	A	4.8	A
Unsignalized Intersection	Existing (2017) No Project				Existing (2017) with Project				
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	
17	Grove Ave / Chino Ave	10.4	B	13.1	B	14.7	B	16.4	C
20	Grove Ave / Schaefer Ave	10.3	B	11.3	B	14.0	B	13.1	B
27	Grove Ave / Edison Ave	18.5	C	21.7	C	49.1	E	60.2	F
33	Grove Ave / Eucalyptus Ave	12.4	B	12.3	B	49.4	E	26.1	D
34	Carpenter Ave / Eucalyptus Ave	7.2	A	7.2	A	11.2	B	11.6	B
36	Grove Ave / Merrill Ave	13.9	B	13.1	B	22.4	C	19.7	C
37	Carpenter Ave / Merrill Ave	16.2	C	16.8	C	29.9	D	36.6	E



March 2018

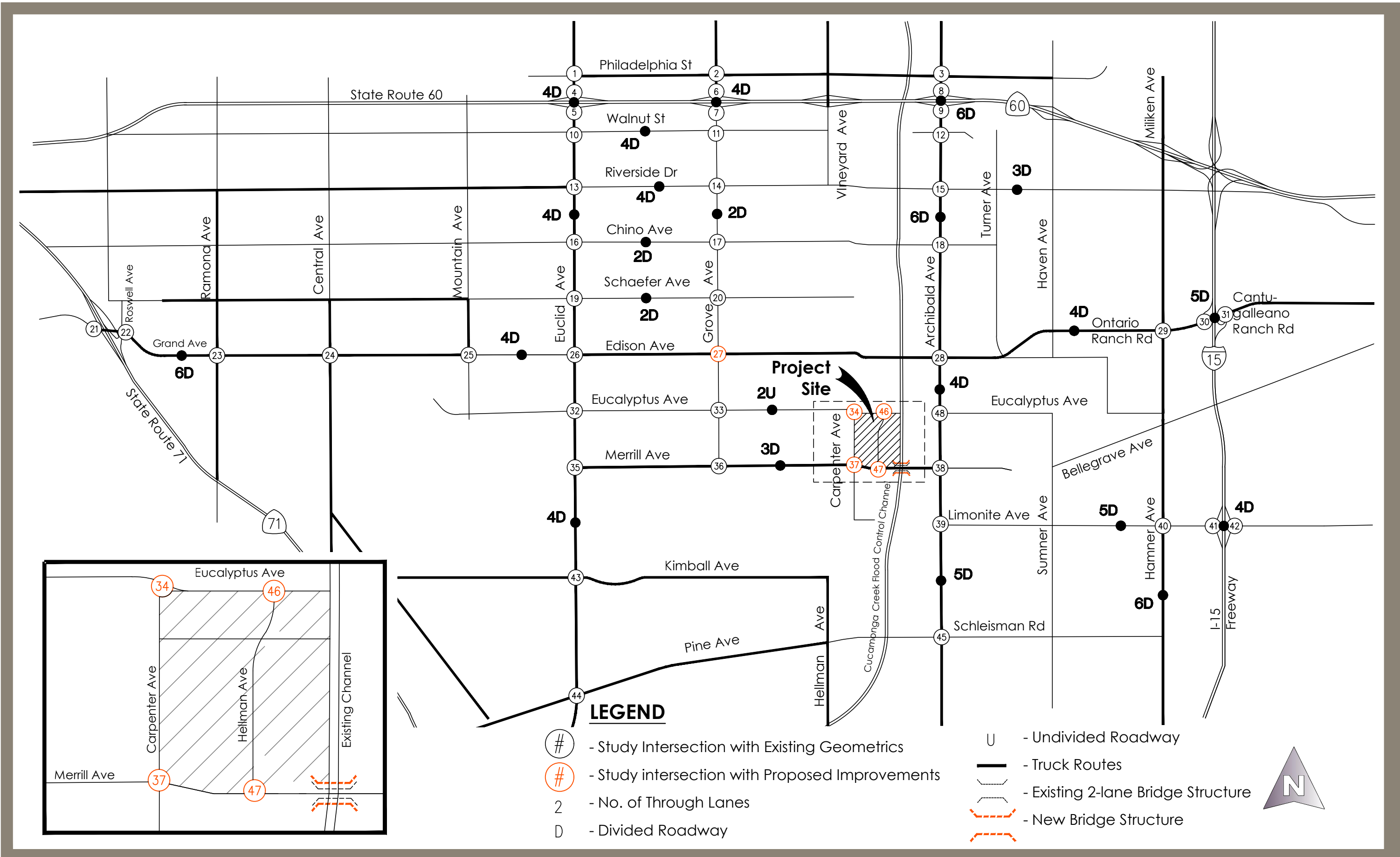
**Table 4-2 - Existing (2017) with Project – Deficient Intersections**

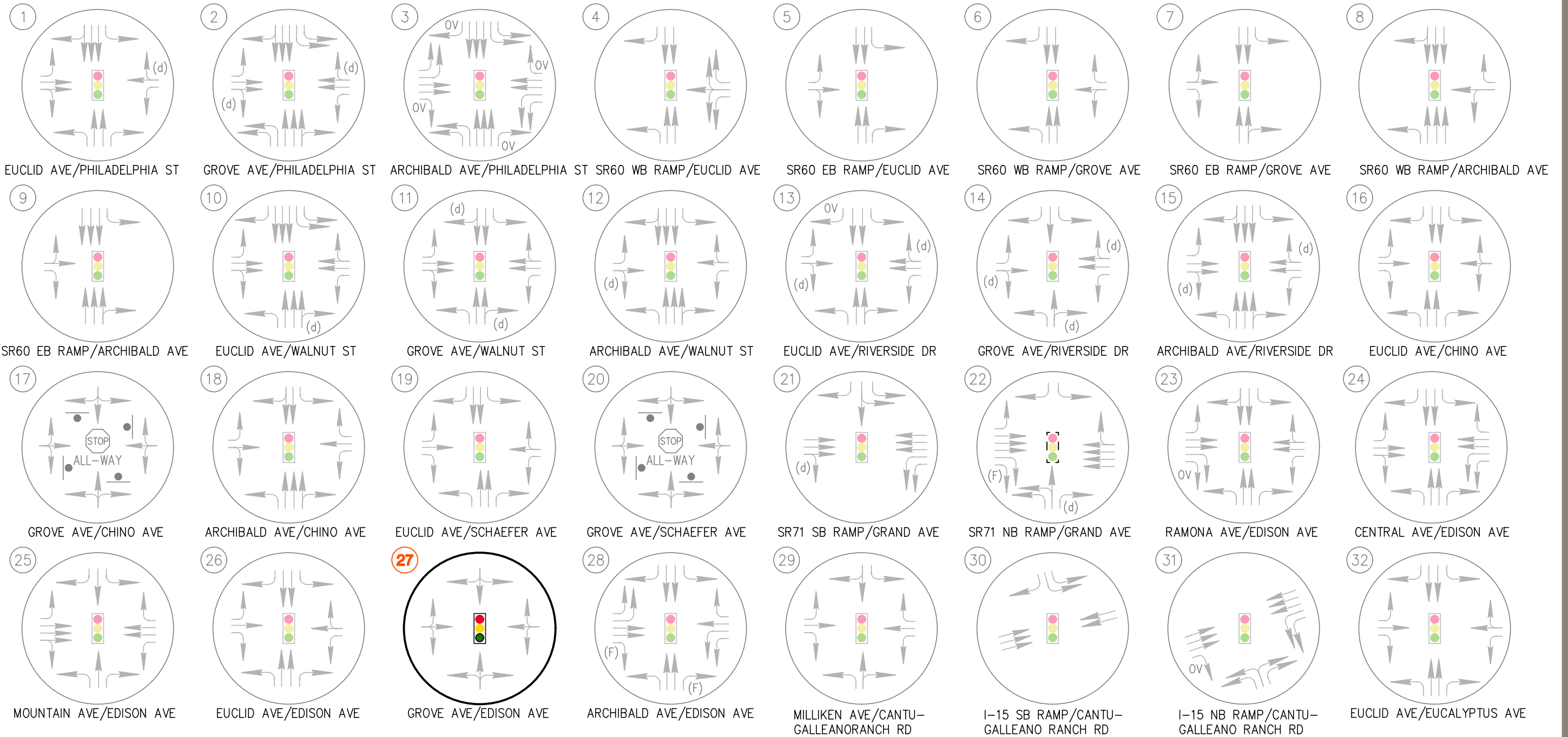
Stop-controlled Intersections	Am Peak Hour		Pm Peak Hour	
	Delay (s)	LOS	Delay (s)	LOS
27. Grove Avenue/Edison Avenue <sup>1</sup>	49.1	E	60.2	F

**Table 4-3 - Existing (2017) with Project – Deficient Intersections with Mitigation**

Intersection (with Mitigation)	Am Peak Hour		Pm Peak Hour	
	Delay (s)	LOS	Delay (s)	LOS
27. Grove Avenue/Edison Avenue (signalize intersection) <sup>1</sup>	15.0	B	15.1	B

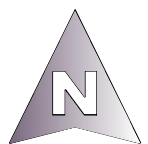
<sup>1</sup> Under jurisdiction of City of Ontario

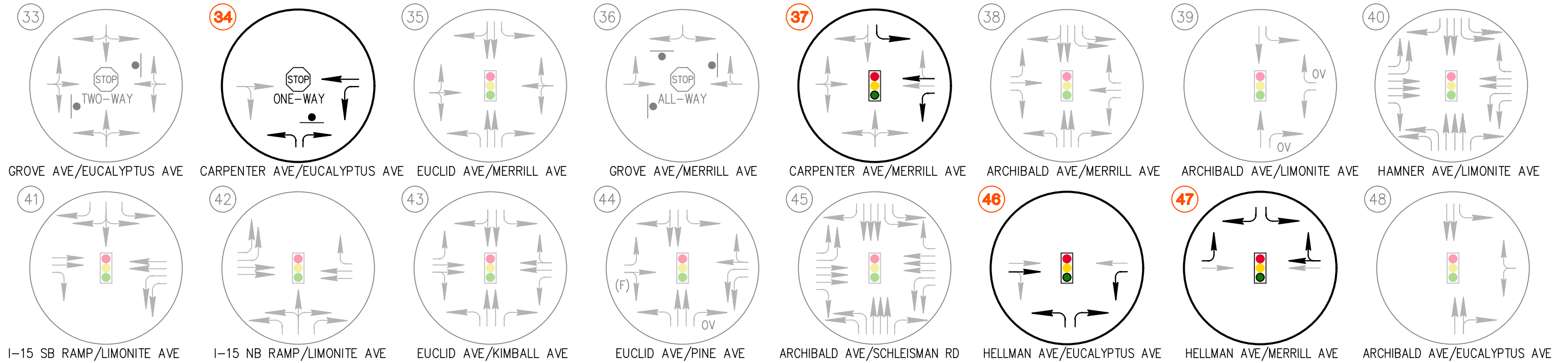




**LEGEND**

See following figure





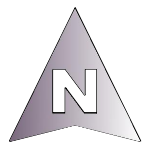
**LEGEND**

**Existing 2017 Network**

- # - Study Intersection with Geometrics and Controls
- (d) - De Facto Right-Turn
- (F) - Free Right-Turn
- OV - Overlap Right-Turn Signal Phase
- STOP - Stop-Controlled Intersection
- - Stop-Controlled Approach
- 🚦 - Signalized Intersection
- ↔ - Existing Turning Movement Lane

**Proposed Project Improvements to Network**

- # - Study Intersection with Proposed Improvements
- OV - Proposed Overlap Right-Turn Signal
- STOP - Proposed Stop-controlled Intersection
- - Proposed Stop-controlled Approach
- 🚦 - Proposed Signalized Intersection
- 🚦 - Proposed Signal Timing Adjustment
- ↔ - Proposed Turning Movement Lane



**Table 4-4**  
**Opening Year (2023) Level of Service at Study Area Intersections**

Signalized Intersection	Opening Year (2023) No Project				Opening Year (2023) with Project				Project Significant Impact		
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		50 Trips or More	Δ Delay ≥ 5 Sec	
	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS			
1	Euclid Ave / Philadelphia St	26.4	C	30.6	C	26.6	C	31.0	C	-	-
2	Grove Ave / Philadelphia St	18.6	B	20.9	C	18.6	B	21.0	C	-	-
3	Archibald Ave / Philadelphia St	15.3	B	19.5	B	15.3	B	19.3	B	-	-
4	SR60 WB Ramp / Euclid Ave	18.1	B	17.8	B	18.6	B	18.3	B	-	-
5	SR60 EB Ramp / Euclid Ave	33.7	C	22.5	C	37.6	D	23.0	C	-	-
6	SR60 WB Ramp / Grove Ave	21.1	C	19.0	B	22.1	C	21.0	C	-	-
7	SR60 EB Ramp / Grove Ave	35.4	D	26.8	C	36.2	D	29.1	C	-	-
8	SR60 WB Ramp / Archibald Ave	14.6	B	21.6	C	15.5	B	22.4	C	-	-
9	SR60 EB Ramp / Archibald Ave	18.9	B	29.8	C	19.4	B	37.7	D	-	-
10	Euclid Ave / Walnut St	19.2	B	22.8	C	20.2	B	26.0	C	-	-
11	Grove Ave / Walnut St	19.7	B	20.0	B	19.8	B	20.1	C	-	-
12	Archibald Ave / Walnut St	7.4	A	8.4	A	7.5	A	8.9	A	-	-
13	Euclid Ave / Riverside Dr	25.4	C	47.7	D	26.9	C	48.0	D	-	-
14	Grove Ave / Riverside Dr	16.5	B	15.9	B	17.1	B	16.7	B	-	-
15	Archibald Ave / Riverside Dr	18.1	B	28.6	C	18.5	B	26.5	C	-	-
16	Euclid Ave / Chino Ave	50.3	D	78.9	E	55.5	E	85.1	F	Yes	-
18	Archibald Ave / Chino Ave	19.1	B	27.7	C	20.5	C	29.3	C	-	-
19	Euclid Ave / Schaefer Ave	29.2	C	34.4	C	31.5	C	37.3	D	-	-
21	SR71 SB Ramp / Grand Ave	12.9	B	65.3	E	13.3	B	67.3	E	-	-
22	SR71 NB Ramp / Grand Ave	59.8	E	98.1	F	59.7	E	111.0	F	Yes	-
23	Ramona Ave / Edison Ave	22.6	C	32.1	C	23.4	C	36.8	D	-	-
24	Central Ave / Edison Ave	26.2	C	48.7	D	27.3	C	61.1	E	-	-
25	Mountain Ave / Edison Ave	15.6	B	15.0	B	15.6	B	15.6	B	-	-
26	Euclid Ave / Edison Ave	16.1	B	37.3	D	17.1	B	42.5	D	-	-
28	Archibald Ave / Edison Ave	95.2	F	144.2	F	123.5	F	153.6	F	Yes	-
29	Milliken Ave / Cantu-Galleano Ranch Rd	95.9	F	161.4	F	100.7	F	175.2	F	Yes	-
30	I-15 SB Ramp / Cantu- Galleano Ranch Rd	47.7	D	64.3	E	68.3	E	79.8	E	-	-
31	I-15 NB Ramp / Cantu- Galleano Ranch Rd	22.7	B	74.6	E	27.6	C	93.7	F	-	Yes
32	Euclid Ave / Eucalyptus Ave	19.2	B	21.3	C	22.7	C	27.5	C	-	-
35	Euclid Ave / Merrill Ave	74.0	E	25.9	C	78.1	E	30.4	C	-	-
38	Archibald Ave / Merrill Ave	27.4	C	46.6	D	34.2	C	55.9	D	-	-
39	Archibald Ave / Limonite Ave	26.1	C	28.4	C	58.4	E	39.5	D	-	-
40	Hamner Ave / Limonite Ave	65.8	E	78.0	E	72.1	E	84.8	F	-	Yes
41	I-15 SB Ramp / Limonite Ave	287.4	F	125.0	F	345.2	F	137.6	F	-	Yes
42	I-15 NB Ramp / Limonite Ave	77.5	E	92.1	F	91.3	F	95.5	F	-	Yes
43	Euclid Ave / Kimball Ave	23.1	C	26.5	C	23.7	C	26.9	C	-	-
44	Euclid Ave / Pine Ave	24.1	C	25.3	C	24.4	C	25.5	C	-	-
45	Archibald Ave / Schleisman Rd	25.2	C	28.0	C	25.9	C	28.8	C	-	-
46	Hellman Ave / Eucalyptus Ave	N/A		N/A		10.2	B	10.7	B	-	-
47	Hellman Ave / Merrill Ave	N/A		N/A		9.1	A	34.7	C	-	-
48	Archibald Ave / Eucalyptus Ave	89.5	F	139.9	F	166.8	F	208.0	F	Yes	-
Unsignalized Intersection	Opening Year (2023) No Project				Opening Year (2023) with Project				Project Significant Impact		
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		50 Trips or More	Δ Delay ≥ 5 Sec	
	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS			
17	Grove Ave / Chino Ave	42.1	E	107.1	F	127.9	F	146.5	F	Yes	-
20	Grove Ave / Schaefer Ave	11.7	B	13.6	B	18.5	C	17.2	C	-	-
27	Grove Ave / Edison Ave	205.3	F	321.4	F	325.0	F	401.6	F	Yes	-
33	Grove Ave / Eucalyptus Ave	18.8	C	18.9	C	735.2	F	82.5	F	Yes	-
34	Carpenter Ave / Eucalyptus Ave	9.5	A	9.6	A	15.0	B	14.4	B	-	-
36	Grove Ave / Merrill Ave	119.1	F	202.5	F	179.9	F	285.7	F	Yes	-
37	Carpenter Ave / Merrill Ave	655.4	F	1166.9	F	1285.8	F	10000.0	F	Yes	-

March 2018

**Table 4-5 – Opening Year 2023 with Project – Deficient Intersections**

Signalized Intersections	Am Peak Hour		Pm Peak Hour	
	Delay (s)	LOS	Delay (s)	LOS
16. Euclid Avenue/Chino Avenue <sup>1</sup>	55.5	E	85.1	F
22. SR-71 NB Ramps/Grand Avenue <sup>2</sup>	59.7	E	111.0	F
28. Archibald Avenue/Edison Avenue <sup>1</sup>	123.5	F	153.6	F
29. Milliken Avenue/Cantu-Galleano Ranch Road <sup>1</sup>	100.7	F	175.2	F
31. I-15 NB Ramps/Cantu-Galleano Ranch Road <sup>2</sup>	27.6	C	93.7	F
40. Hamner Avenue/Limonite Avenue <sup>3</sup>	72.1	E	84.8	F
41. I-15 SB Ramps/Limonite Avenue <sup>2</sup>	345.2	F	137.6	F
42. I-15 NB Ramps/Limonite Avenue <sup>2</sup>	91.3	F	95.5	F
48. Archibald Avenue/Eucalyptus Avenue <sup>1</sup>	166.8	F	208.0	F
Stop-controlled Intersections	Am Peak Hour		Pm Peak Hour	
	Delay (s)	LOS	Delay (s)	LOS
17. Grove Avenue/Chino Avenue <sup>1</sup>	127.9	F	146.5	F
27. Grove Avenue/Edison Avenue <sup>1</sup>	325.0	F	401.6	F
33. Grove Avenue/Eucalyptus Avenue <sup>1</sup>	735.2	F	82.5	F
36. Grove Avenue/Merrill Avenue <sup>1</sup>	179.9	F	285.7	F
37. Carpenter Avenue/Merrill Avenue <sup>1</sup>	1285.8	F	10000.0	F

<sup>1</sup> Under jurisdiction of City of Ontario

<sup>2</sup> Under jurisdiction of City of Caltrans

<sup>3</sup> Under jurisdiction of City of Eastvale

March 2018

**Table 4-6 - Opening Year 2023 with Project – Deficient Intersections with Mitigation**

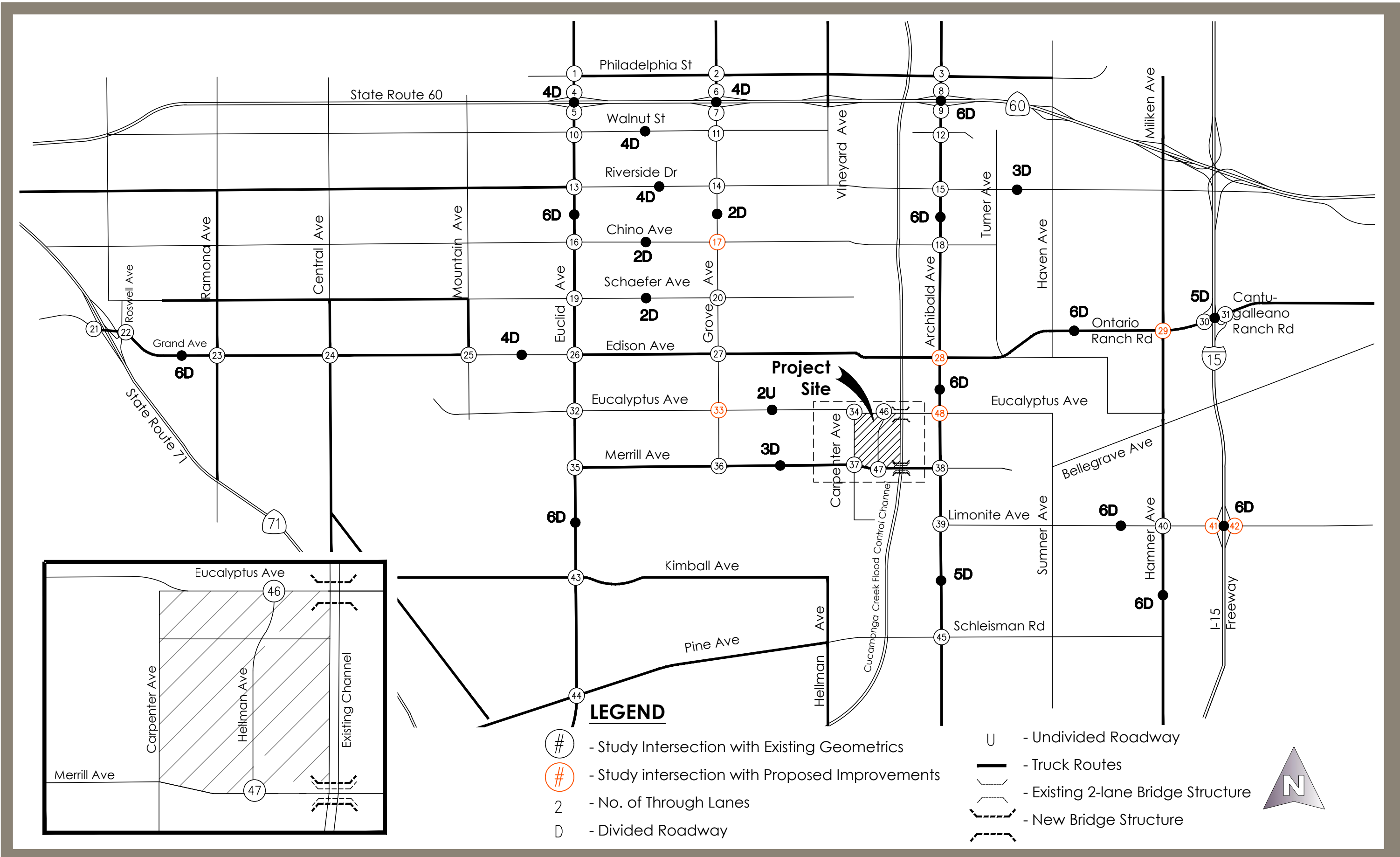
Intersection (with Mitigation)	Am Peak Hour		Pm Peak Hour	
	Delay (s)	LOS	Delay (s)	LOS
16. Euclid Avenue/Chino Avenue (add WBL) <sup>1</sup>	35.2	D	48.4	D
17. Grove Avenue/Chino Avenue (signalize intersection) <sup>1</sup>	15.2	B	16.5	B
22. SR-71 NB Ramps/Grand Avenue (overlap SBR) <sup>2</sup>	22.3	C	41.9	D
27. Grove Avenue/Edison Avenue (signalize intersection) <sup>1</sup>	27.3	C	46.0	D
28. Archibald Avenue/Edison Avenue (add 3 <sup>rd</sup> NBT, add 3 <sup>rd</sup> SBT, add 3 <sup>rd</sup> EBT, add 2 <sup>nd</sup> WBT, add 2 <sup>nd</sup> SBL, add 3 <sup>rd</sup> WBT) <sup>1</sup>	43.6	D	64.8	E
29. Milliken Avenue/Cantu-Galleano Ranch Road (add 3 <sup>rd</sup> SBT, add 3 <sup>rd</sup> EBT, add 3 <sup>rd</sup> WBT, overlap EBR, add SBR w/ OVL) <sup>1</sup>	60.8	E	72.6	E
31. I-15 NB Ramps/Cantu-Galleano Ranch Road (signal timing/operation improvements) <sup>2</sup>	27.6	C	93.7	F
33. Grove Avenue/Eucalyptus Avenue (signalize intersection) <sup>1</sup>	10.8	B	13.5	B
36. Grove Avenue/Merrill Avenue (add EBL, add 2 <sup>nd</sup> EBT, add 2 <sup>nd</sup> WBT, signalize intersection) <sup>1</sup>	19.7	B	21.0	C
37. Carpenter Avenue/Merrill Avenue (add SBL, add 2 <sup>nd</sup> WBT, add WBL, signalize intersection) <sup>1</sup>	13.6	B	44.6	D
40. Hamner Avenue/Limonite Avenue (overlap NBR, overlap SBR, overlap EBR, overlap WBR, add 3 <sup>rd</sup> WBT) <sup>3</sup>	72.1	E	84.8	F
41. I-15 SB Ramps/Limonite Avenue (add 3 <sup>rd</sup> EBT, add 3 <sup>rd</sup> WBT, reconstruct interchange to partial clover leaf) <sup>2</sup>	8.2	A	5.3	A
42. I-15 NB Ramps/Limonite Avenue (add 3 <sup>rd</sup> EBT, add 3 <sup>rd</sup> WBT, reconstruct interchange to partial clover leaf) <sup>2</sup>	19.0	B	14.3	B
48. Archibald Avenue/Eucalyptus Avenue (add NBL, add 3 <sup>rd</sup> NBT, add 3 <sup>rd</sup> SBT, add EBL, add EBT, add EBR w/ OVL, add 2 <sup>nd</sup> NBL) <sup>1</sup>	37.2	D	62.9	E

<sup>1</sup> Under jurisdiction of City of Ontario

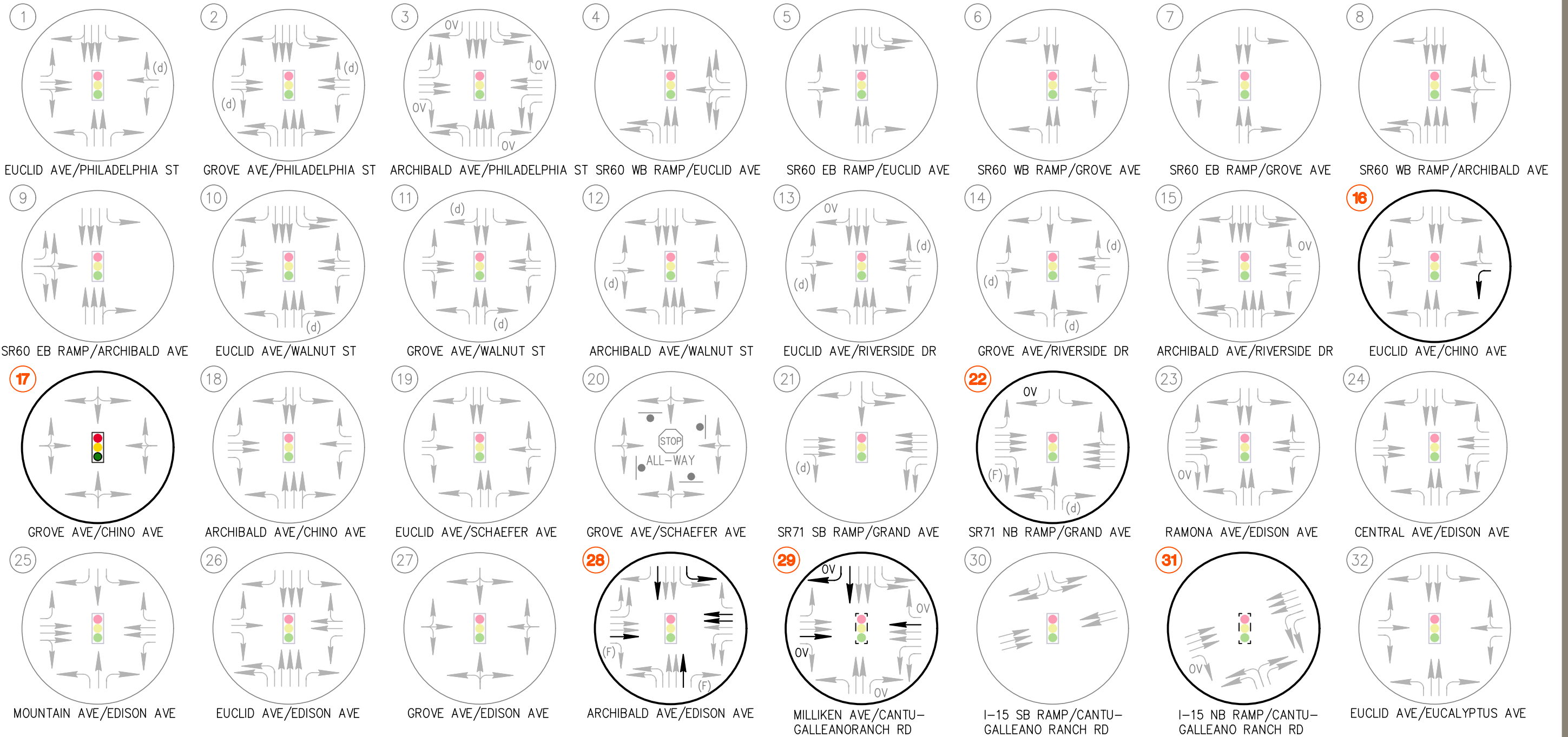
<sup>2</sup> Under jurisdiction of City of Caltrans

<sup>3</sup> Under jurisdiction of City of Eastvale



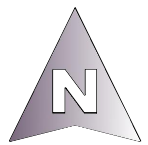


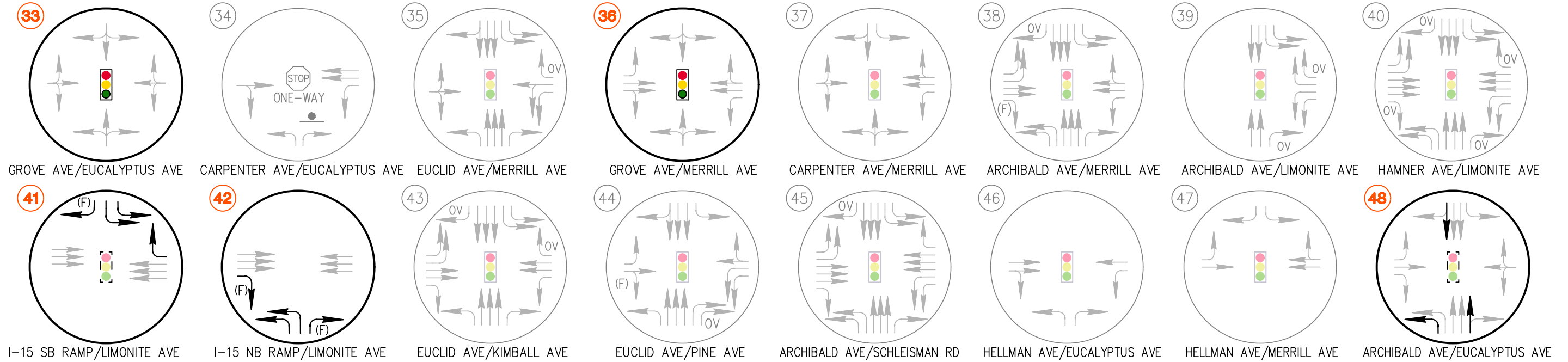




**LEGEND**

See following figure





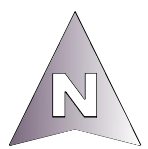
### LEGEND

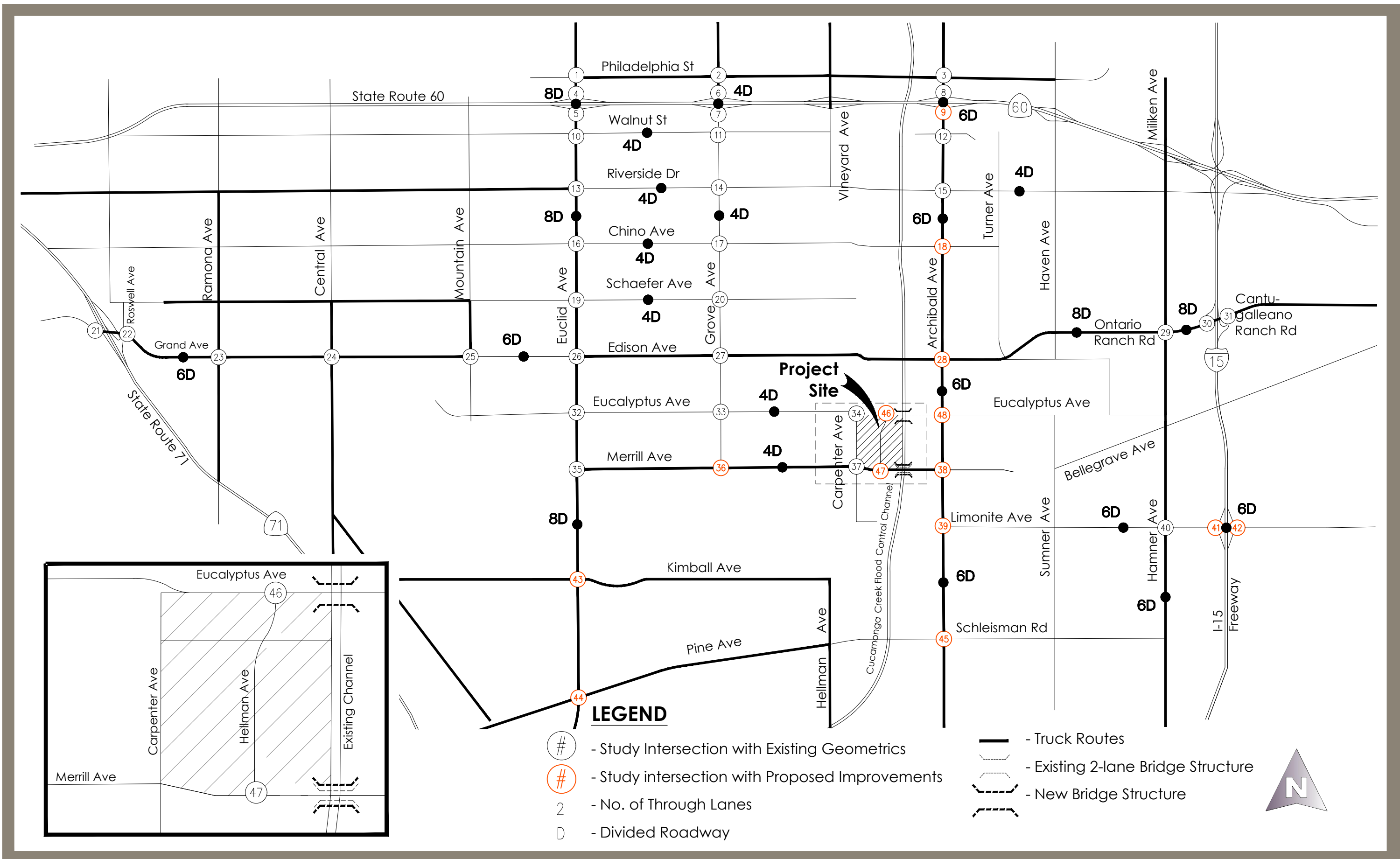
#### Opening Year 2023 Network

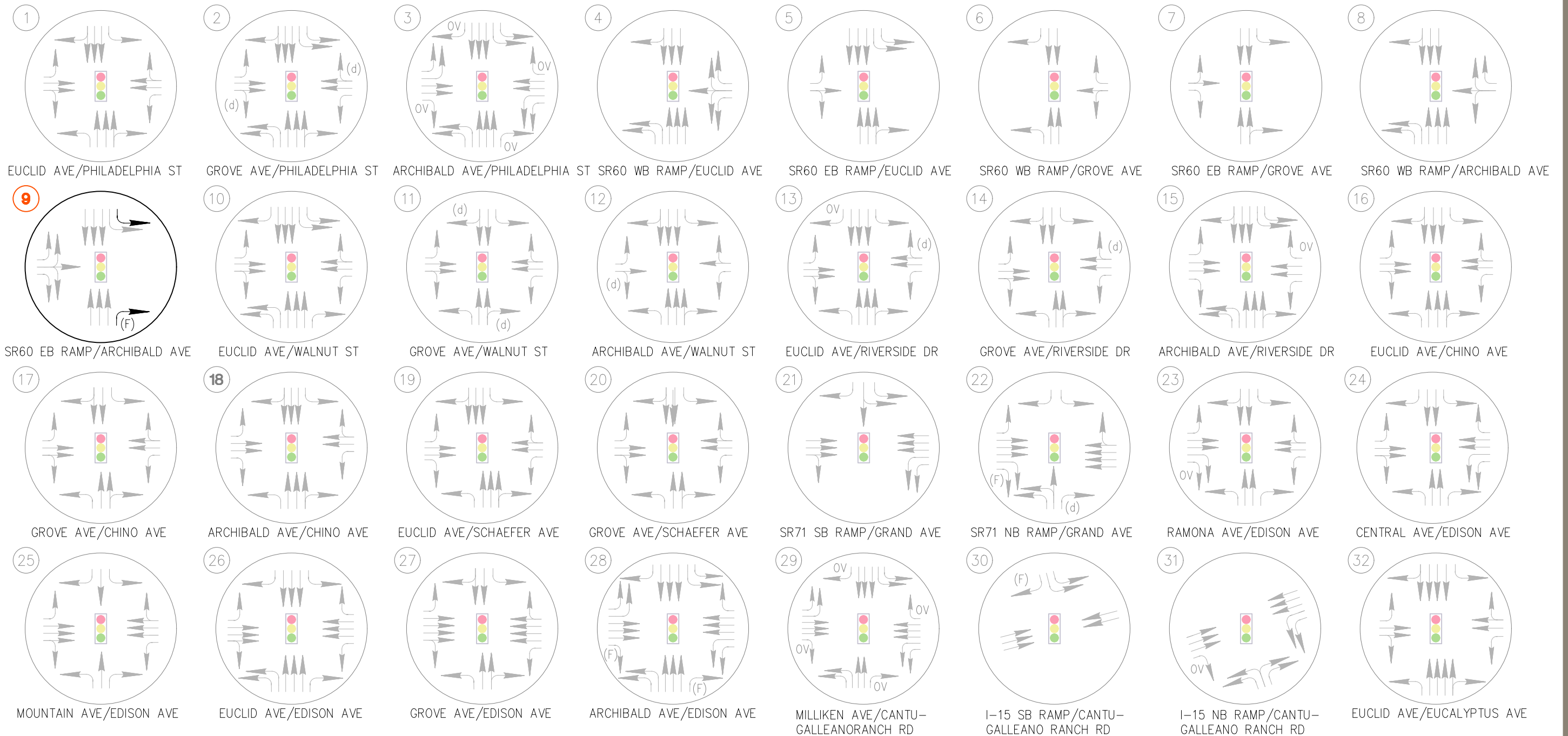
- # - Study Intersection with Geometrics and Controls
- (d) - De Facto Right-Turn
- (F) - Free Right-Turn
- OV - Overlap Right-Turn Signal Phase
- STOP - Stop-Controlled Intersection
- - Stop-Controlled Approach
- 🚦 - Signalized Intersection
- ↔ - Existing Turning Movement Lane

#### Proposed Project Improvements to Network

- # - Study Intersection with Proposed Improvements
- (F) - Proposed Free Right-Turn
- OV - Proposed Overlap Right-Turn Signal
- STOP - Proposed Stop-Controlled Intersection
- - Proposed Stop-Controlled Approach
- 🚦 - Proposed Signalized Intersection
- 🚦 - Proposed Signal Timing Adjustment
- ↔ - Proposed Turning Movement Lane

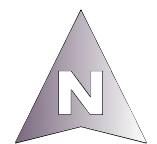


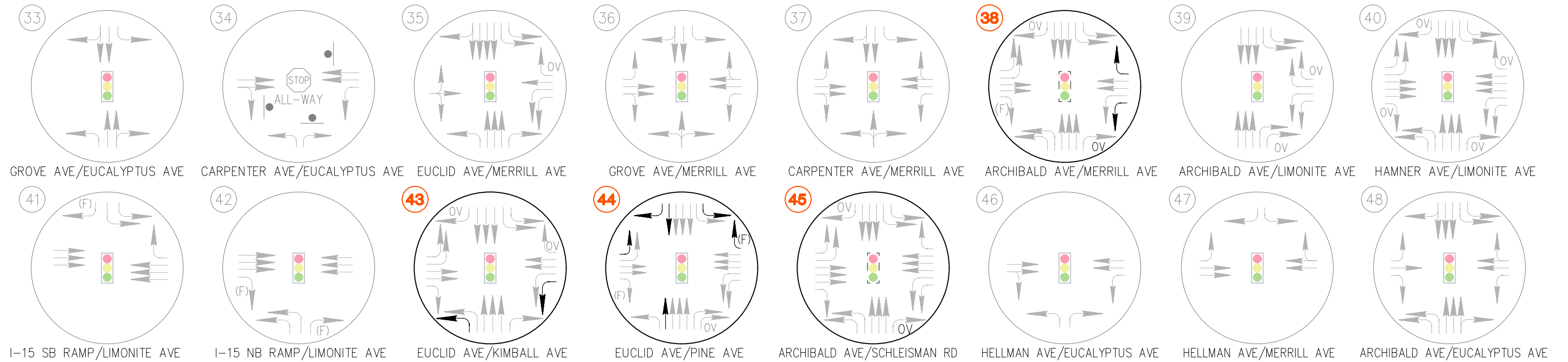




**LEGEND**

See following figure





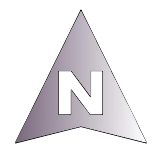
### LEGEND

#### 2040 Horizon Year Network

- # - Study Intersection with Geometrics and Controls
- (d) - De Facto Right-Turn
- (F) - Free Right-Turn
- OV - Overlap Right-Turn Signal Phase
- STOP - Stop-Controlled Intersection
- - Stop-Controlled Approach
- 🚦 - Signalized Intersection
- ↔ - Existing Turning Movement Lane

#### Proposed Cumulative Project Improvements to Network

- # - Study Intersection with Proposed Improvements
- (F) - Proposed Free Right-Turn
- OV - Proposed Overlap Right-Turn Signal
- STOP - Proposed Stop-Controlled Intersection
- - Proposed Stop-Controlled Approach
- 🚦 - Proposed Signalized Intersection
- 🚦 - Proposed Signal Timing Adjustment
- ↔ - Proposed Turning Movement Lane





**Table 4-7**  
**Horizon Year 2040 Level of Service at Study Area Intersections**

Signalized Intersection	Horizon Year 2040 No Project				Horizon Year 2040 with Project				Project Significant Impact		
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		50 Trips or More	Δ Delay ≥ 5 Sec	
	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS			
1	Euclid Ave / Philadelphia St	19.9	B	28.2	C	19.9	B	28.2	C	-	-
2	Grove Ave / Philadelphia St	20.3	C	24.0	C	20.4	C	23.8	C	-	-
3	Archibald Ave / Philadelphia St	15.2	B	19.5	B	15.2	B	19.5	B	-	-
4	SR60 WB Ramp / Euclid Ave	20.6	C	20.4	C	21.2	C	21.4	C	-	-
5	SR60 EB Ramp / Euclid Ave	39.4	D	28.3	C	44.1	D	31.0	C	-	-
6	SR60 WB Ramp / Grove Ave	32.3	C	36.7	D	35.0	D	40.6	D	-	-
7	SR60 EB Ramp / Grove Ave	61.8	E	51.2	D	63.1	E	57.0	E	-	-
8	SR60 WB Ramp / Archibald Ave	16.3	B	52.8	D	19.6	B	62.2	E	-	-
9	SR60 EB Ramp / Archibald Ave	13.6	B	14.7	B	13.3	B	14.8	B	-	-
10	Euclid Ave / Walnut St	22.6	C	31.3	C	25.2	C	31.4	C	-	-
11	Grove Ave / Walnut St	22.2	C	22.7	C	23.2	C	23.3	C	-	-
12	Archibald Ave / Walnut St	7.2	A	8.5	A	7.4	A	8.8	A	-	-
13	Euclid Ave / Riverside Dr	22.2	C	32.5	C	22.6	C	34.1	C	-	-
14	Grove Ave / Riverside Dr	16.2	B	16.3	B	15.5	B	16.7	B	-	-
15	Archibald Ave / Riverside Dr	17.4	B	23.7	C	17.7	B	25.3	C	-	-
16	Euclid Ave / Chino Ave	12.1	B	14.2	B	12.2	B	14.7	B	-	-
17	Grove Ave / Chino Ave	11.0	B	11.7	B	10.5	B	11.5	B	-	-
18	Archibald Ave / Chino Ave	17.8	B	20.7	C	18.4	B	22.0	C	-	-
19	Euclid Ave / Schaefer Ave	17.6	B	21.2	C	18.1	B	22.0	C	-	-
20	Grove Ave / Schaefer Ave	9.2	A	10.1	B	9.0	A	10.5	B	-	-
21	SR71 SB Ramp / Grand Ave	12.5	B	48.8	D	12.9	B	50.2	D	-	-
22	SR71 NB Ramp / Grand Ave	19.9	B	24.6	C	19.6	B	26.2	C	-	-
23	Ramona Ave / Edison Ave	20.8	C	26.2	C	21.2	C	30.9	C	-	-
24	Central Ave / Edison Ave	24.2	C	40.7	D	24.8	C	48.9	D	-	-
25	Mountain Ave / Edison Ave	15.2	B	15.1	B	15.0	B	15.5	B	-	-
26	Euclid Ave / Edison Ave	16.6	B	21.7	C	18.0	B	27.8	C	-	-
27	Grove Ave / Edison Ave	10.1	B	10.6	B	10.6	B	11.1	B	-	-
28	Archibald Ave / Edison Ave	23.2	C	42.6	D	31.1	C	47.7	D	-	-
29	Milliken Ave / Cantu-Galleano Ranch Rd	34.9	C	58.2	E	35.4	D	65.2	E	-	-
30	I-15 SB Ramp / Cantu- Galleano Ranch Rd	14.4	B	6.8	A	15.2	B	7.2	A	-	-
31	I-15 NB Ramp / Cantu- Galleano Ranch Rd	13.7	B	51.4	D	15.2	B	64.3	E	-	-
32	Euclid Ave / Eucalyptus Ave	12.6	B	13.6	B	13.8	B	14.7	B	-	-
33	Grove Ave / Eucalyptus Ave	6.6	A	6.9	A	8.2	A	10.7	B	-	-
35	Euclid Ave / Merrill Ave	25.4	C	33.0	C	32.5	C	42.3	D	-	-
36	Grove Ave / Merrill Ave	6.7	A	8.8	A	8.5	A	9.0	A	-	-
37	Carpenter Ave / Merrill Ave	6.6	A	12.4	B	6.8	A	12.7	B	-	-
38	Archibald Ave / Merrill Ave	28.0	C	49.4	D	36.9	D	65.8	E	-	-
39	Archibald Ave / Limonite Ave	31.6	C	28.2	C	50.5	D	39.5	D	-	-
40	Hamner Ave / Limonite Ave	52.8	D	47.1	D	59.7	E	52.1	D	-	-
41	I-15 SB Ramp / Limonite Ave	5.4	A	12.5	B	5.3	A	12.3	B	-	-
42	I-15 NB Ramp / Limonite Ave	43.0	D	43.5	D	53.8	D	46.8	D	-	-
43	Euclid Ave / Kimball Ave	28.1	C	30.4	C	29.7	C	31.3	C	-	-
44	Euclid Ave / Pine Ave	20.8	C	22.3	C	21.0	C	22.3	C	-	-
45	Archibald Ave / Schleisman Rd	21.3	C	23.3	C	21.4	C	23.7	C	-	-
46	Hellman Ave / Eucalyptus Ave	1.3	A	0.8	A	8.7	A	4.1	A	-	-
47	Hellman Ave / Merrill Ave	1.1	A	1.0	A	3.5	A	4.7	A	-	-
48	Archibald Ave / Eucalyptus Ave	21.9	C	52.4	D	34.1	C	74.5	E	-	-
Unsignalized Intersection	Horizon Year 2040 No Project				Horizon Year 2040 with Project				Project Significant Impact		
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		50 Trips or More	Δ Delay ≥ 5 Sec	
	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS			
34	Carpenter Ave / Eucalyptus Ave	9.4	A	9.4	A	15.1	C	13.0	B	-	-

## **SECTION 5.0** **FREEWAY MAINLINE ANALYSIS**

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Existing and Opening Year 2023 with Project am/pm peak hour freeway mainline volumes and level of service for Year 2023, and Horizon Year 2040 scenarios are provided on Figures 5-1A, 5-2A, and 5-3A respectively, for State Route 60, and on Figures 5-1B, 5-1B, and 5-1B respectively, for Interstate 15. LOS calculations are included in the appendices.

### 5.1. SR-60 FREEWAY MAINLINE ANALYSIS – OPENING YEAR 2023 AND HORIZON YEAR 2040 WITH PROJECT CONDITIONS

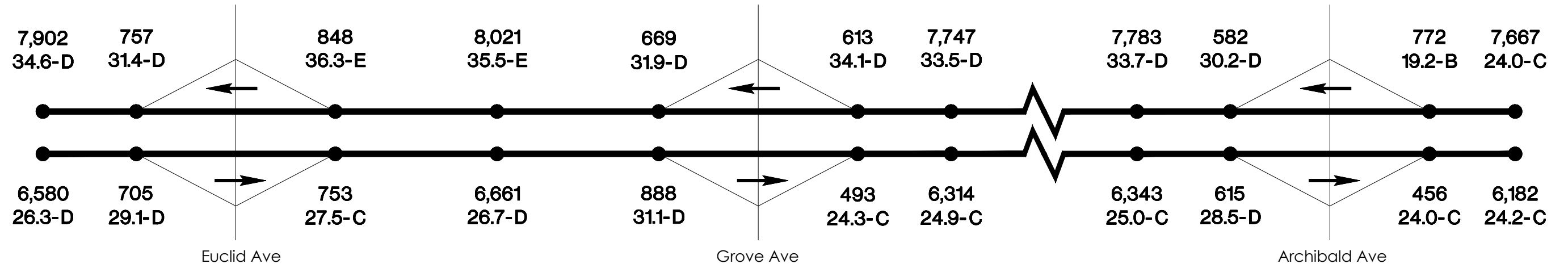
Table 5-1 provides a summary of mainline LOS analysis for the SR-60 Freeway with Opening Year 2023 with Project and Horizon Year 2040 peak hour volumes. Table 5-1 shows that typically SR-60 study segments will operate at LOS E or F with forecast cumulative Project Year and Horizon Year 2040 volumes. At this time, there is no fee program or mechanism by which deficiencies associated with future development may be addressed. Freeway mainline LOS calculations are included in the appendices.

### 5.2. I-15 FREEWAY MAINLINE ANALYSIS – OPENING YEAR 2023 AND HORIZON YEAR 2040 WITH PROJECT CONDITIONS

Table 5-2 provides a summary of mainline LOS analysis for the I-15 Freeway with Opening Year 2023 with Project and Horizon Year 2040 peak hour volumes. Table 5-2 shows that typically I-15 study segments will operate at LOS E or F south of the Cantu-Galleano Ranch Road interchange with forecast cumulative Project Year and Horizon Year 2040 volumes. There are currently long range plans to add capacity to the I-15 Freeway from SR-74 in Lake Elsinore to the SR-60 in Ontario. Freeway mainline LOS calculations are included in the appendices.

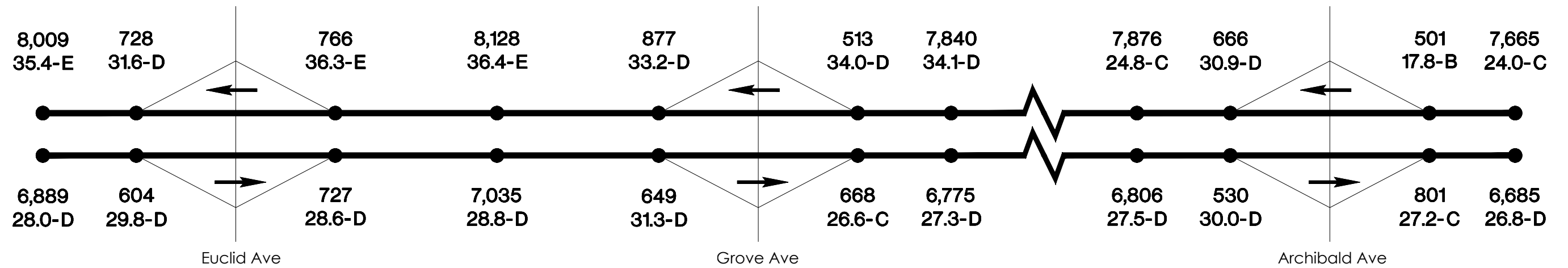
AM Peak Hour

SR-60 Freeway



PM Peak Hour

SR-60 Freeway



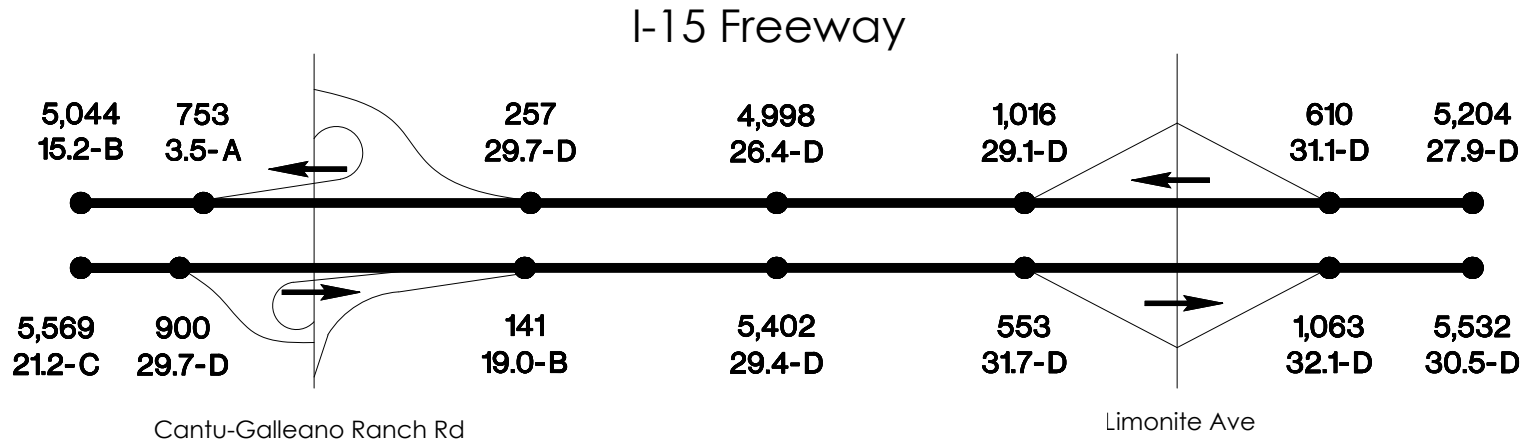
Legend

- X,XXX - Peak Hour Trip Volume
- XX.X - Passenger Cars Per Mile per Lane (PCPMPL)
- D - LOS

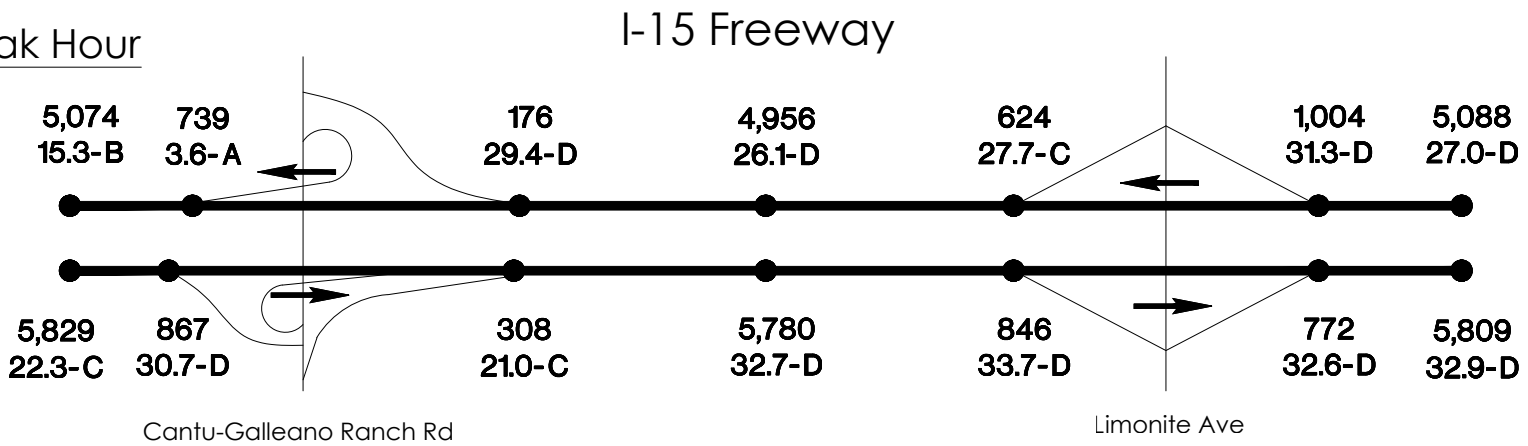




## AM Peak Hour



## PM Peak Hour



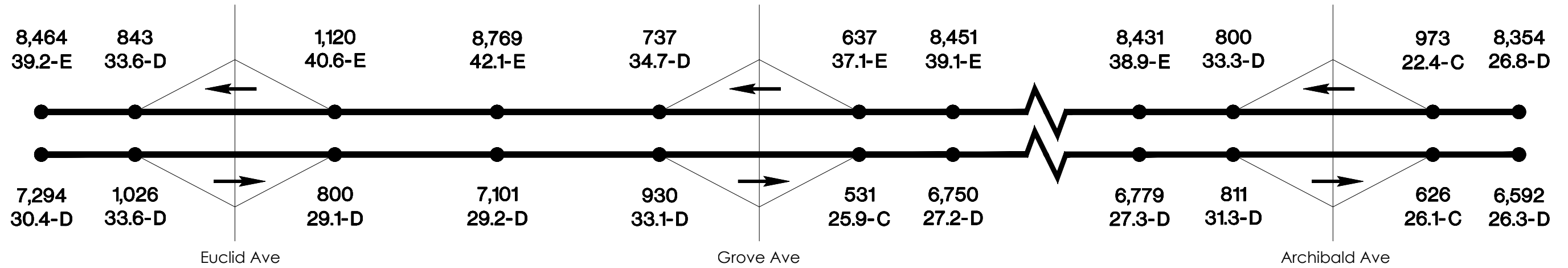
### Legend

- X,XXX** - Peak Hour Trip Volume
- XX.X** - Passenger Cars Per Mile per Lane (PCPMPL)
- C** - LOS



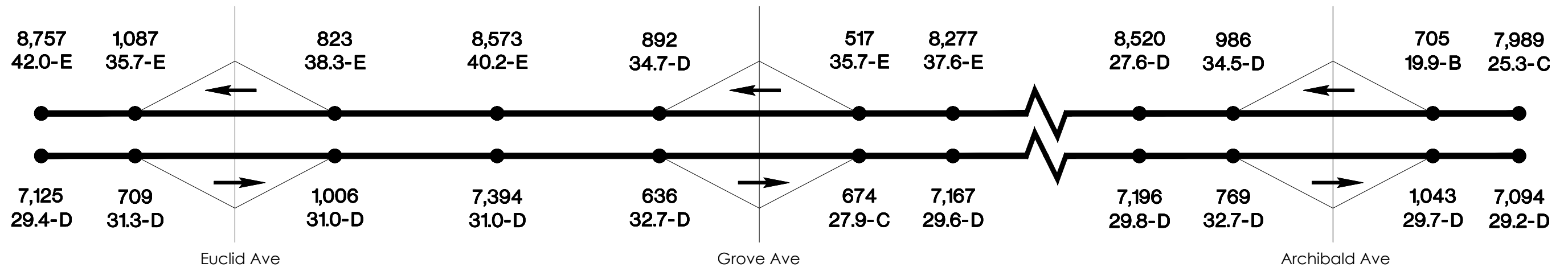
AM Peak Hour

SR-60 Freeway



PM Peak Hour

SR-60 Freeway

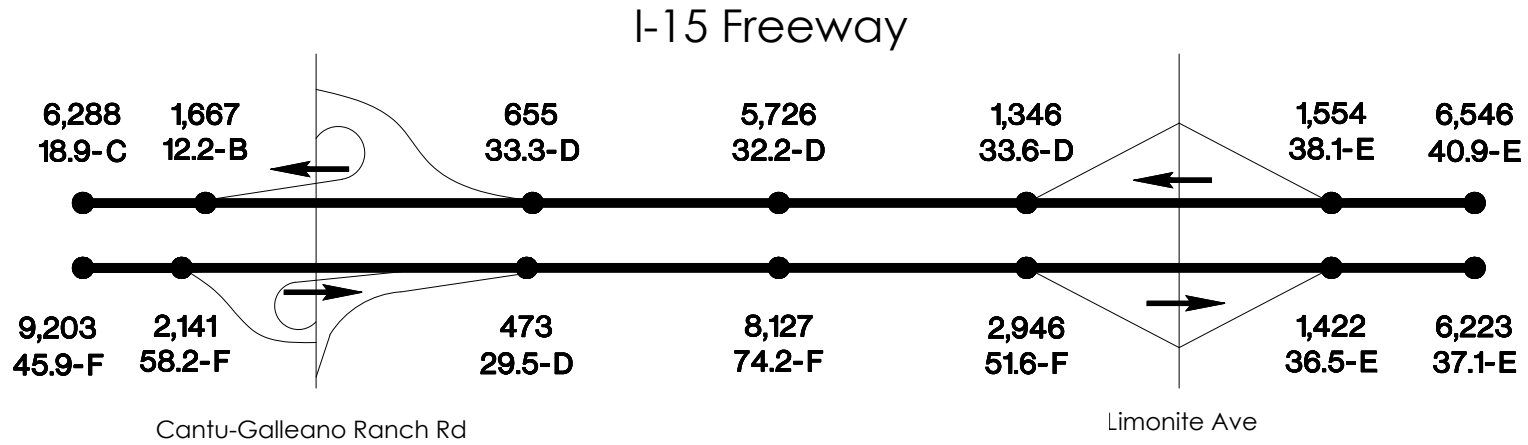


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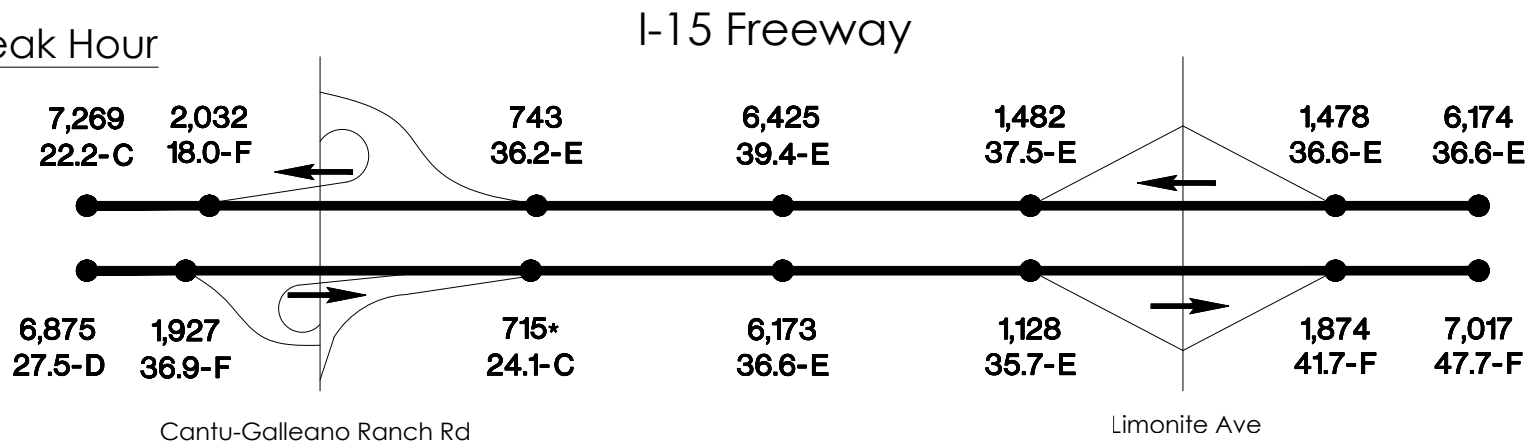
- X,XXX - Peak Hour Trip Volume
- XX.X - Passenger Cars Per Mile per Lane (PCPMPL)
- D - LOS



## AM Peak Hour



## PM Peak Hour



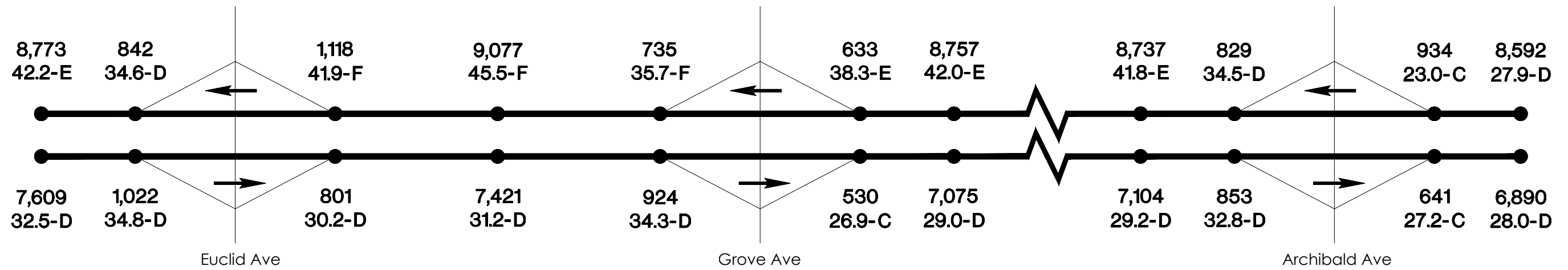
### Legend

- X,XXX** - Peak Hour Trip Volume
- XX.X** - Passenger Cars Per Mile per Lane (PCPMPL)
- F** - LOS



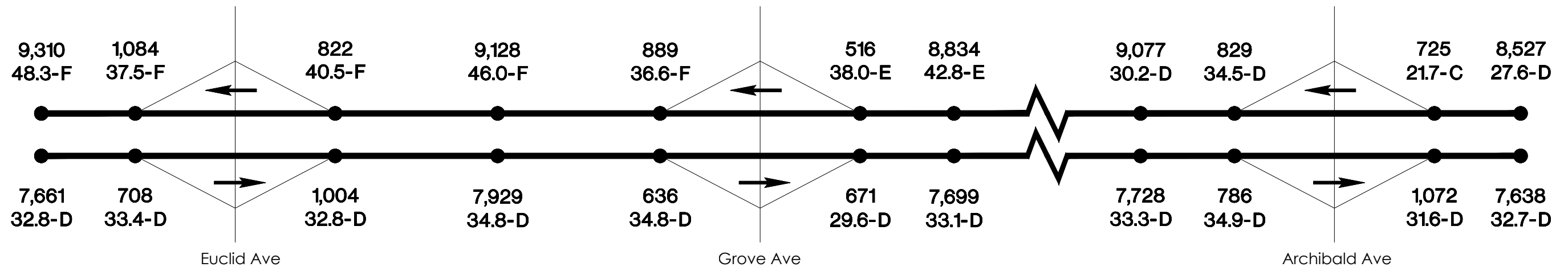
AM Peak Hour

SR-60 Freeway



PM Peak Hour

SR-60 Freeway

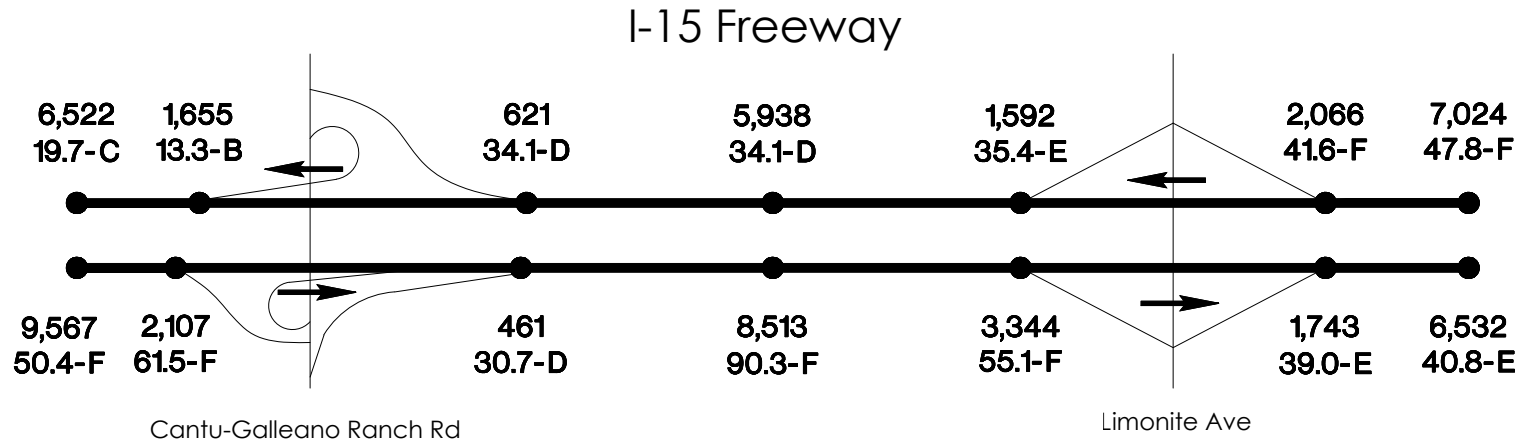


Legend

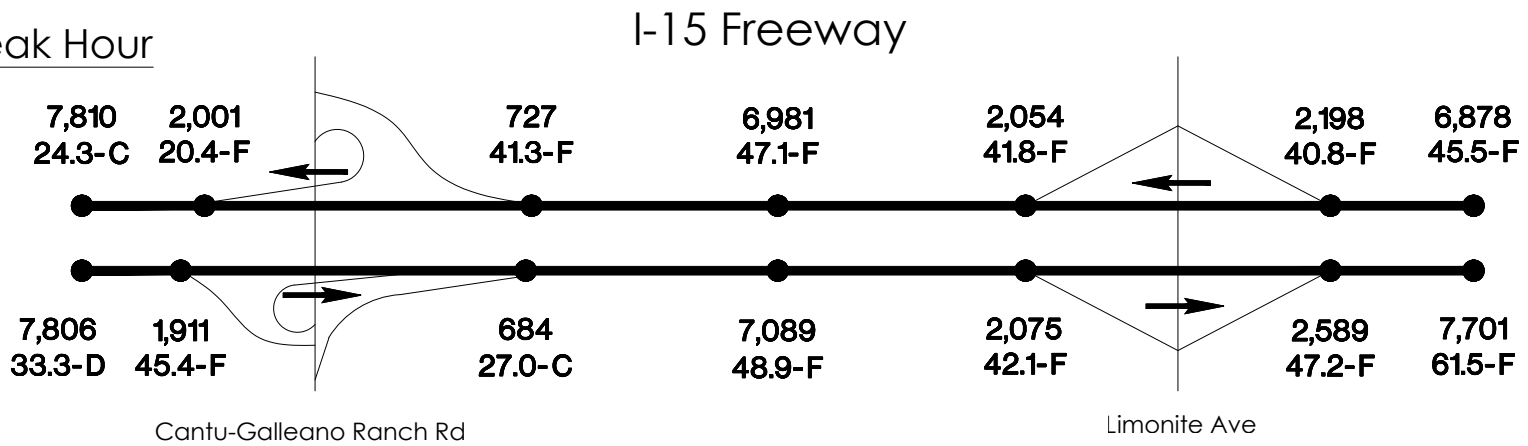
- X,XXX - Peak Hour Trip Volume
- XX.X - Passenger Cars Per Mile per Lane (PCPMPL)
- D - LOS



## AM Peak Hour



## PM Peak Hour



### Legend

- X,XXX** - Peak Hour Trip Volume
- XX.X** - Passenger Cars Per Mile per Lane (PCPMPL)
- D** - LOS



**Table 5-1  
SR-60 Freeway Mainline Level of Service Analysis**

Facility Scenario	FREEWAY MAINLINE SEGMENT																																							
	SR-60 Mountain Ave to Euclid Ave				SR-60 Euclid Ave to Grove Ave				SR-60 11 <sup>th</sup> Grove Ave to Vineyard Ave				SR-60 Vineyard Ave to Archibald Ave				SR-60 Archibald Ave to Haven Ave																							
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM																					
	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS																		
Existing 2017	25.3	C	34.2	D	27.8	D	34.9	D	25.9	C	35.3	E	28.6	D	36.1	E	24.9	C	33.5	D	27.3	D	34.1	D	25.0	C	33.7	D	27.5	D	24.8	C	24.0	C	23.5	C	26.3	D	23.8	C
Existing 2017 with Project	26.3	D	34.6	D	28.0	D	35.4	E	26.7	D	35.5	E	28.8	D	36.4	E	24.9	C	33.5	D	27.3	D	34.1	D	25.0	C	33.7	D	27.5	D	24.8	C	24.2	C	24.0	C	26.8	D	24.2	C
Opening Year 2023 with Project	30.4	D	39.2	E	29.4	D	42.0	E	29.2	D	42.1	E	31.0	D	40.2	E	27.2	D	39.1	E	29.6	D	37.6	E	27.3	D	38.9	E	29.8	D	27.6	D	26.3	D	26.8	D	29.2	D	25.3	C
Horizon Year 2040	32.5	D	42.2	E	32.8	D	48.3	F	31.2	D	45.5	F	34.8	D	46.0	F	29.0	D	42.0	E	33.1	D	42.8	E	29.2	D	41.8	E	33.3	D	30.2	D	28.0	D	27.9	D	32.7	D	27.6	D

Facility Scenario	FREEWAY MERGE/DIVERGE SEGMENT AT EUCLID AVENUE															
	SR-60 Euclid Ave On-Ramp (Merge)				SR-60 Euclid Ave Off-Ramp (Diverge)											
	Eastbound		Westbound		Eastbound			Westbound								
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM						
Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS					
Existing 2017	13.6	B	17.5	B	31.1	D	31.3	D	28.2	D	29.6	D	36.2	E	36.1	E
Existing 2017 with Project	27.5	C	28.6	D	31.4	D	31.6	D	29.1	D	29.8	D	36.3	E	36.3	E
Opening Year 2023 with Project	29.1	D	31.0	D	33.6	D	35.7	E	33.6	D	31.3	D	40.6	E	38.3	E
Horizon Year 2040	30.2	D	32.8	D	34.6	D	37.5	F	34.8	D	33.4	D	41.9	F	40.5	F

Facility Scenario	FREEWAY MERGE/DIVERGE SEGMENT AT GROVE AVENUE															
	SR-60 Grove Ave On-Ramp (Merge)				SR-60 Grove Ave Off-Ramp (Diverge)											
	Eastbound		Westbound		Eastbound		Westbound									
	AM	PM	AM	PM	AM	PM	AM	PM								
Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS									
Existing 2017	24.3	C	26.6	C	31.7	D	32.9	D	29.8	D	31.0	D	34.1	D	34.0	D
Existing 2017 with Project	24.3	C	26.6	C	31.9	D	33.2	D	31.1	D	31.3	D	34.1	D	34.0	D
Opening Year 2023 with Project	25.9	C	27.9	C	34.7	D	34.7	D	33.1	D	32.7	D	37.1	E	35.7	E
Horizon Year 2040	26.9	C	29.6	D	35.7	F	36.6	F	34.3	D	34.8	D	38.3	E	38.0	E

Facility Scenario	FREEWAY MERGE/DIVERGE SEGMENT ARCHIBALD AVENUE															
	SR-60 Archibald Ave On-Ramp (Merge)				SR-60 Archibald Ave Off-Ramp (Diverge)											
	Eastbound		Westbound		Eastbound			Westbound								
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM						
Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS	Density (pcpmp)	LOS					
Existing 2017	23.7	C	26.5	C	30.2	D	30.9	D	28.5	D	30.0	D	18.1	B	17.4	B
Existing 2017 with Project	24.0	C	27.2	C	30.2	D	30.9	D	28.5	D	30.0	D	19.2	B	17.8	B
Opening Year 2023 with Project	26.1	C	29.7	D	33.3	D	34.5	D	31.3	D	32.7	D	22.4	C	19.9	B
Horizon Year 2040	27.2	C	31.6	D	34.5	D	34.5	D	32.8	D	34.9	D	23.0	C	21.7	C

V:\2073\active\2073013140\report\Tables\[Table 5-1 - SR60Mainline LOS Analysis.xls]Sheet1

**Table 5-2  
I-15 Freeway Mainline Level of Service Analysis**

Facility  Scenario	FREEWAY MAINLINE SEGMENT																							
	I-15 Cantu-Galleano Ranch road to SR60				I-15 Limonite Avenue to Cantu-Galleano Ranch Road				I-15 68th Street To Limonite Avenue															
	AM		PM		AM		PM		AM		PM													
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB												
	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS										
<b>Existing 2017</b>	15.0	B	20.4	C	14.9	B	21.7	C	26.4	D	29.0	D	26.0	D	31.8	D	27.1	D	30.2	D	26.8	D	32.9	D
<b>Existing 2017 with Project</b>	15.2	B	21.2	C	15.3	B	22.3	C	26.4	D	29.4	D	26.1	D	32.7	D	27.9	D	30.5	D	27.0	D	32.9	D
<b>Opening Year 2023 with Project</b>	18.9	C	45.9	F	22.2	C	27.5	D	32.2	D	74.2	F	39.4	E	36.6	E	40.9	E	37.1	E	36.6	E	47.7	F
<b>Horizon Year 2040</b>	19.7	C	50.4	F	24.3	C	33.3	D	34.1	D	90.3	F	47.1	F	48.9	F	47.8	F	40.8	E	45.5	F	61.5	F

Facility  Scenario	FREEWAY MERGE/DIVERGE SEGMENT																															
	I-15 Cantu-Galleano Ranch Rd On-Ramp (Merge)				I-15 Cantu-Galleano Ranch Rd Off-Ramp (Diverge)				I-15 Limonite Ave On-Ramp (Merge)				I-15 Limonite Ave Off-Ramp (Diverge)																			
	Northbound		Southbound		Northbound		Southbound		Northbound		Southbound		Northbound		Southbound																	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM																
	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS	Density (pcpmpl)	LOS														
<b>Existing 2017</b>	3.1	A	2.6	A	18.9	B	20.7	C	28.7	D	29.3	D	29.6	D	30.1	D	29.0	D	27.7	C	31.9	D	32.6	D	30.4	D	31.1	D	31.6	D	33.2	D
<b>Existing 2017 with Project</b>	3.5	A	3.6	A	19.0	B	21.0	C	29.7	D	29.4	D	29.7	D	30.7	D	29.1	D	27.7	C	32.1	D	32.6	D	31.1	D	31.3	D	31.7	D	33.7	D
<b>Opening Year 2023 with Project</b>	12.2	B	18.0	F	29.5	D	24.1	C	33.3	D	36.2	E	58.2	F	36.9	F	33.6	D	37.5	E	36.5	E	41.7	F	38.1	E	36.6	E	51.6	F	35.7	E
<b>Horizon Year 2040</b>	13.3	B	20.4	F	30.7	D	27.0	C	34.1	D	41.3	F	61.5	F	45.4	F	35.4	E	41.8	F	39.0	E	47.2	F	41.6	F	40.8	F	55.1	F	42.1	F

**SECTION 6.0 FINDINGS AND RECOMMENDATIONS**

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6.1. ROADWAY AND INTERSECTION INFRASTRUCTURE IMPLEMENTATION PLAN

This analysis has confirmed that LOS D or better will typically be maintained throughout the project study area roadway segments at Opening Year 2023 and at 2040 Horizon Year (build-out) based on the infrastructure improvements identified in the West Ontario Commerce Center Specific Plan. Roadway improvements will be implemented to construct half-sections of ultimate roadway configurations along the Project frontage and full-width roadway improvements will be constructed for Hellman Avenue. Figures 6-1A and 6-1B provide the City roadway classifications and Specific Plan cross sections for Merrill Avenue, Hellman Avenue, Carpenter Avenue and Eucalyptus Avenue.

Implementation of planned improvements to Merrill and Eucalyptus Avenues will require widening and construction, respectively, of bridge structures over the Cucamonga Flood Control Channel. The widening of the Merrill Avenue bridge should correspond and be coordinated with improvements to Merrill Avenue to a four-lane collector roadway from the channel to Archibald Avenue.

The Specific Plan identifies that the intersections of Merrill Avenue/Hellman Avenue and Eucalyptus Avenue/Hellman Avenue are to be signalized with project development and both intersections are therefore considered in this analysis as signalized by 2023.

6.1.1. Off-site Intersection and Roadway Analysis and Mitigation Recommendations

This study confirms that roadway segments included in this analysis will typically meet or exceed LOS E performance criteria for existing with project, cumulative project, and Horizon Year 2040 conditions. Mitigation improvements at deficient study area intersections have been identified where the Project has a significant Existing with Project or cumulative Opening Year 2023 impact. These intersection improvements are summarized together with agency jurisdiction, funding program information, estimated



March 2018

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rough cost, and Project fair share contribution on Table 1-1 in the Executive Summary section of this report. Analysis of Horizon Year 2040 conditions indicates that following contribution to mitigation of Opening Year 2023 cumulative project impacts, there are no further study area deficiencies associated with Horizon Year 2040 no Project or with Project conditions. Below is a summary of mitigations that shall be done by the West Ontario Commerce Center Project:

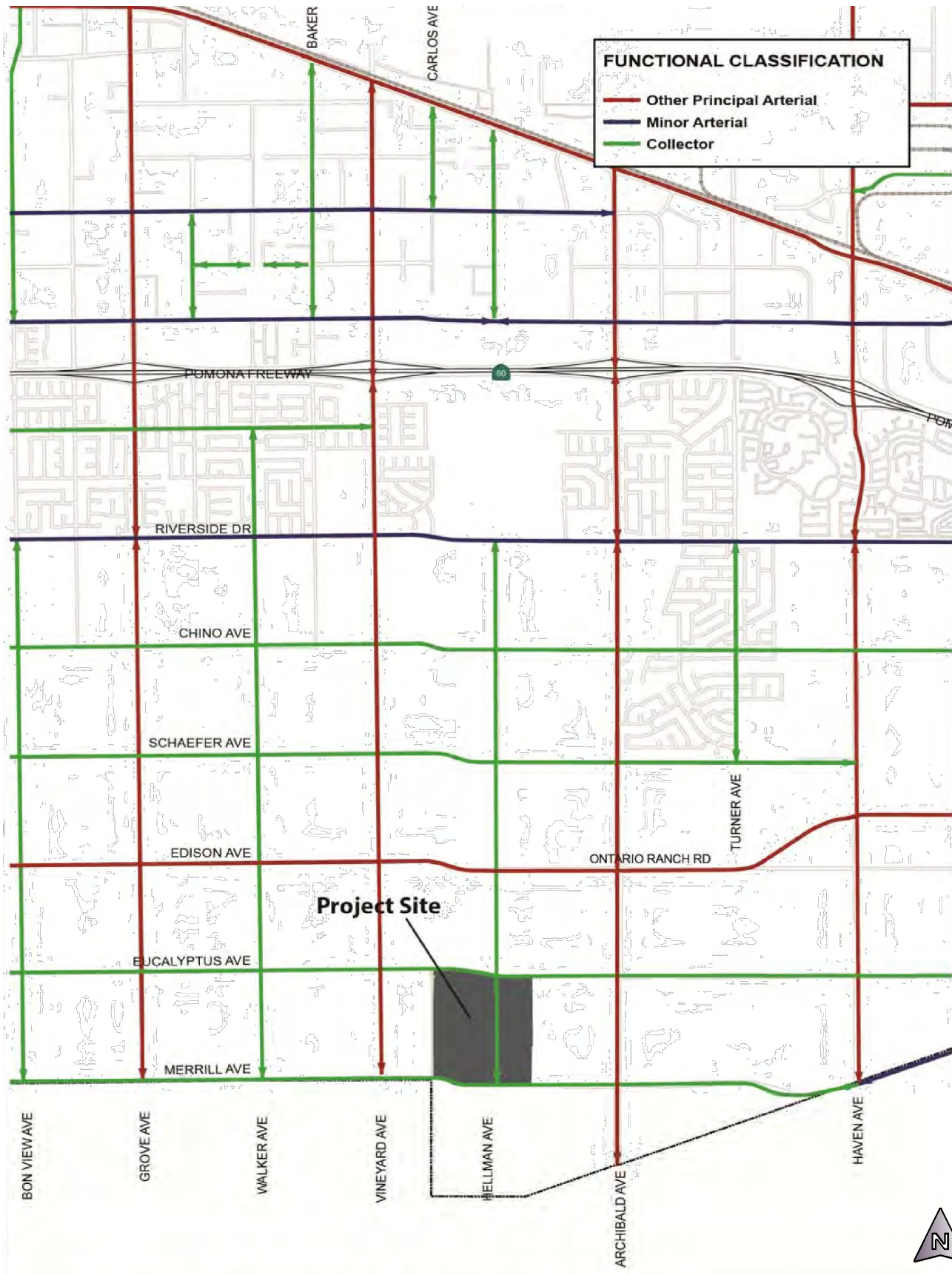
1. Construct Traffic Signal Improvements at Grove and Edison
2. Contribute \$73,465 in fair share mitigation to the City of Ontario (non-DIF)
3. Contribute \$98,982 to the City of Chino
4. Contribute \$256,557 to the City of Eastvale
5. Contribute \$95,818 to Caltrans

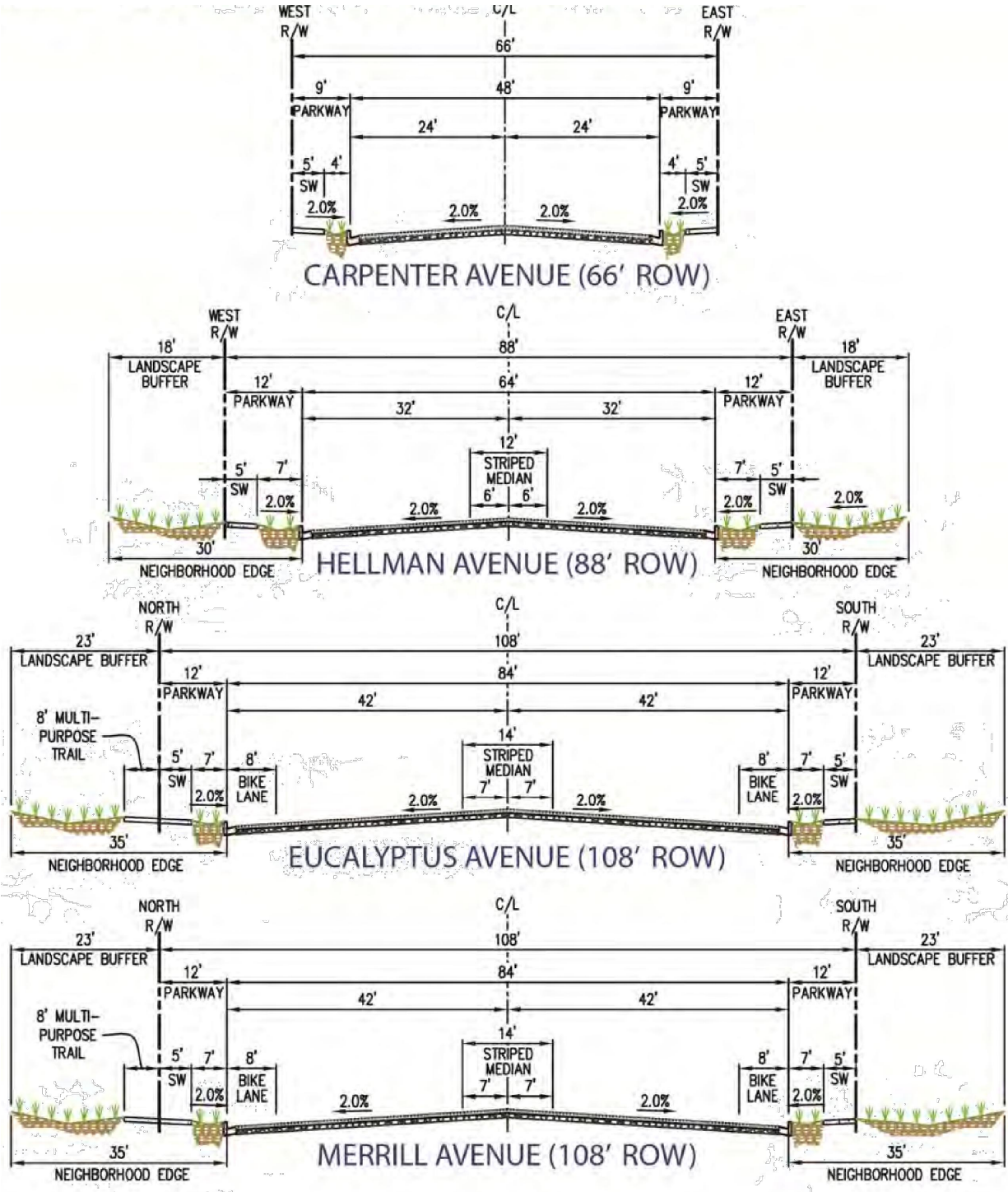
The total Project contribution to the City of Ontario DIF is \$1,099,901 and the Project's total fair share cost is estimated at \$1,624,723

The Project fair share contribution to the respective agencies were determined by summing up the improvement costs of the intersections that are identified to have significant impact. The improvements that would be funded by the City's DIF program are not included in the Project's estimated total project fair share contribution.

#### 6.1.2. SR-60 and I-15 Freeway Mainline Analysis

This study analyzed existing freeway traffic volumes and future forecasts of Project and cumulative project volumes and identified that for existing peak hour conditions the SR-60 and I-15 Freeways are typically operating at LOS D or better. With future cumulative project conditions, however, the SR-60 and I-15 Freeways are anticipated to typically operate at LOS F during peak hours. At this time, there is no fee program or mechanism by which deficiencies associated with future development may be addressed. There are currently long-range plans to add capacity to the I-15 Freeway from SR-74 in Lake Elsinore to the SR-60 in Ontario.





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File: Impact of ITE Trip Generation Manual Update to the TIA

Date: March 9, 2018

**Reference: West Ontario Commerce Center Specific Plan Traffic Impact Analysis**

The West Ontario Commerce Center Specific Plan Traffic Impact Analysis references the ITE Trip Generation Manual 9<sup>th</sup> Edition to estimate the project trip generation per the direction of the City of Ontario as the 9<sup>th</sup> Edition Manual was the latest available reference at the commencement of the analysis. However, 10<sup>th</sup> Edition update was introduced in the Fall of 2017 while the project began in early 2016.

Below is the comparison of ITE Trip Generation Manual 9<sup>th</sup> edition and 10<sup>th</sup> Edition trip generation rates for land use codes 150 Warehousing and 770 Business Park,

**Trip Rates**

**ITE Trip Generation Manual, 9<sup>th</sup> Edition**

Land Use (Code No.)	Weekday 24-hr Avg. Rate	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
Warehousing (150)	3.56	0.24	0.06	0.08	0.24
Business Park (770)	12.44	1.19	0.21	0.33	0.93

**ITE Trip Generation Manual, 10<sup>th</sup> Edition**

Land Use (Code No.)	Weekday 24-hr Avg. Rate	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
Warehousing (150)	1.74	0.13	0.04	0.05	0.14
Business Park (770)	12.44	0.24	0.16	0.19	0.23

As shown on tables above, identified trip rates for Warehousing land use in the 9<sup>th</sup> Edition of the ITE Trip Generation Manual are consistently higher than the 10<sup>th</sup> edition and especially for the weekday 24-hr average rate, the rate is significantly higher (almost 200%). Business Park land use identifies the same rate for weekday 24-hr average rate in each edition, while the peak hour rates are significantly higher in the 9<sup>th</sup> edition.

ITE Trip Generation Manuals also provide fitted curve equations based on the average rates above. The trip generation prepared for the West Ontario Commerce Center (WOCC) Traffic Impact Analysis used fitted curve equations from the 9<sup>th</sup> edition. Below is a summary of the WOCC trip generation based on equations provided in the Trip Generation Manuals 9<sup>th</sup> and 10<sup>th</sup> editions for each land use.



Reference: West Ontario Commerce Center Specific Plan Traffic Impact Analysis

### Project Trip Generation

**ITE Trip Generation Manual, 9<sup>th</sup> Edition**

Land Use	Quantity	Weekday ADT	AM Peak Hour		PM Peak Hour	
			In	Out	In	Out
1a. Warehouse East	1,253,889	3,674	235	63	67	199
1b. Warehouse West	1,276,116	4,124	254	67	72	217
2. Business Park	555,505	6,615	638	113	180	511
Total	-	14,413	1,127	242	319	927

**ITE Trip Generation Manual, 10<sup>th</sup> Edition**

Land Use	Quantity	Weekday ADT	AM Peak Hour		PM Peak Hour	
			In	Out	In	Out
1a. Warehouse East	1,253,889	2,027	135	40	48	130
1b. Warehouse West	1,276,116	2,062	137	41	49	132
2. Business Park	555,505	6,615	135	87	107	126
Total	-	10,704	407	168	204	388

Trips in the tables above include passenger vehicles and trucks and have not been converted to passenger car equivalents (PCE).

### **Comparison of 9<sup>th</sup> Edition vs. 10<sup>th</sup> Edition Project Trip Generation**

ITE Trip Generation Manual Editions	Weekday ADT	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
9 <sup>th</sup> Edition	14,413	1127	242	319	927
10 <sup>th</sup> Edition	10,704	407	168	204	388
<b>Change</b>	<b>(3,709)</b>	<b>(720)</b>	<b>(74)</b>	<b>(115)</b>	<b>(539)</b>
<b>Percent</b>	<b>(25.7%)</b>	<b>(63.9%)</b>	<b>(30.6%)</b>	<b>(36.1%)</b>	<b>(58.1%)</b>

Comparison of project trip volumes based on the 10<sup>th</sup> edition of the ITE Trip Generation Manual are significantly lower than those forecasted with use of the 9<sup>th</sup> edition. Therefore, the project study trip generation forecast is considered conservative.

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