APPENDIX I

TRANSPORTATION ANALYSIS

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June 6, 2025

Ms. Jennifer Ackerman
City of Livermore – Planning Division
1052 S. Livermore Avenue
Livermore, CA 94550

Re: Traffic Counts Comparison Analysis for the Proposed Residential Development at 2930 Pacific Avenue in Livermore, California

Dear Ms. Ackerman:

This letter is provided to confirm the continued validity of the Traffic Impact Analysis (TIA) report previously submitted for the 2930 Pacific Avenue Residential Development in Livermore, California, dated January 11, 2024.

As the 2023 traffic counts used in the traffic operations analysis are more than two years old, we have conducted a comparison of the 2023 and current 2025 traffic volumes for the busiest study intersections and roadway segments. This comparison found no significant changes in travel patterns in the study area as described in this letter. Therefore, the original assumptions and conclusions of the TIA remain applicable.

Data Collection

Intersection turning movement counts (AM and PM peak hours) and 24-hour roadway segment tube counts were collected on May 28, 2025 at the following locations. Count sheets are included in the Appendix.

Study Intersections (AM & PM Peak Hour Counts)

1. S. Livermore Avenue & East Avenue
2. S. Livermore Avenue & Pacific Avenue
3. Dolores Street & East Avenue

Study Roadway Segments (24-Hr Traffic Counts)

1. S. Livermore Avenue (north of Pacific Avenue)
2. Pacific Avenue (east of S. Livermore Avenue)

Traffic Counts Comparison

All of the study intersections experienced increases in total intersection volumes between 2.4 percent and 10.8 percent from 2023 to 2025, with the exception of the intersection at S. Livermore Avenue and Pacific Avenue, which had a 5.7 percent decrease in total intersection volume during the AM peak hour over the two-year period. All of the study roadway segments experienced volume increase between 7.5 percent and 9.7 percent between 2023 and 2025. Tables 1 and 2 below show the percentage differences of the intersection volumes and roadway segments from

2023 to 2025, respectively. Comparison between the 2025 and 2023 traffic counts revealed no significant changes in traffic patterns in the study area.

Table 1
Intersection Volume Variations from 2023 to 2025

			Intersection Volumes			
#	Intersection	Peak	2023 [1]	2025 [2]	Difference	% Increase
1	S. Livermore Avenue & East Avenue	AM	1539	1599	60	3.9%
		PM	1738	1780	42	2.4%
2	S. Livermore Avenue & Pacific Avenue	AM	776	732	-44	-5.7%
		PM	784	822	38	4.8%
3	Dolores Street & East Avenue	AM	1726	1913	187	10.8%
		PM	1808	1883	75	4.1%

Notes:
[1] Based on counts from January 2023
[2] Based on counts from May 2025

Table 2
Roadway Segment Volume Variations from 2023 to 2025

		Daily Traffic			
#	Roadway Segment	2023 [1]	2025 [2]	Difference	% Increase
1	S. Livermore Avenue (north of Pacific Avenue)	6,424	7,044	620	9.7%
2	Pacific Avenue (east of S. Livermore Avenue)	3,157	3,395	238	7.5%

Notes:
[1] Based on counts from January 2023
[2] Based on counts from May 2025

Effects on the 2024 Transportation Analysis

Potential effects on the intersection and roadway segment level of service based on the new 2025 traffic counts were analyzed and presented as follows.

Intersection Level of Service

Results of the intersection level of service analysis from the Transportation Study prepared by Hexagon in 2024 concluded that, based on the 2023 traffic counts, all study intersections would operate at an acceptable level of service D or better with and without the project under all study scenarios.

Between 2023 and 2025, the intersections of S. Livermore Avenue/East Avenue and S. Livermore/Avenue Pacific Avenue experienced relatively moderate intersection volume increases of less than five percent during both AM and PM peak hours. Because of the moderate intersection volume increases, it is anticipated that both intersections would continue to operate at acceptable LOS D based on the 2025 traffic counts.

The intersection at Dolores Street/East Avenue was projected to operate at LOS B with and without the project under all study scenarios based on the 2023 traffic counts. Although the intersection volumes increased by a relatively higher 10.8 percent during the AM peak hour

between 2023 and 2025, it is anticipated that the intersection would have sufficient capacity buffer to accommodate the additional traffic increase and still continue to operate at acceptable LOS D or better based on the 2025 traffic counts.

Roadway Segment Level of Service

Results of the roadway segment level of service analysis from the Transportation Study prepared by Hexagon in 2024 concluded that, based on the 2023 traffic counts, the roadway segments of S. Livermore Avenue (north of Pacific Avenue) and Pacific Avenue (east of S. Livermore Avenue) would operate at an acceptable level of service A with and without the project under all study scenarios.

Based on the moderate traffic volumes increases on both roadway segments at under ten percent, it is anticipated that both segments would continue to operate at acceptable level of service A under all study scenarios.

Conclusions

A traffic count comparison analysis was performed to estimate the effects of the new 2025 traffic counts on the previous Transportation Analysis dated January 2024. The analysis resulted in the following key findings:

- Comparison between the 2025 and 2023 traffic counts revealed no significant changes in traffic patterns in the study area.
- Based on the level of service analysis results from the previous Transportation Analysis, it is anticipated that all study intersections and study roadway segments would continue to operate at acceptable LOS D based on the 2025 traffic counts.
- Based on the queuing analysis results from the previous Transportation Analysis, it is anticipated that the project would not exacerbate any queuing issues based on the new 2025 traffic counts.
- The new 2025 traffic counts would not have any effects on the VMT, site access, and on-site circulation analyses from the previous Transportation Analysis.

If you have any questions, please feel free to give us a call.

Sincerely,

HEXAGON TRANSPORTATION CONSULTANTS, INC.

Trisha Dudala

Trisha Dudala, P.E.

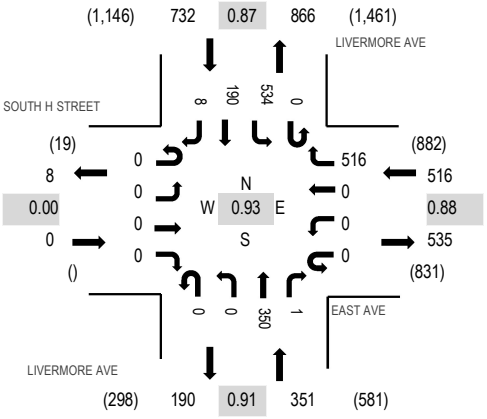
Principal Associate

Appendix
2025 Traffic Counts

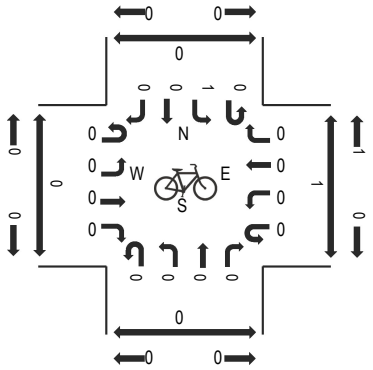
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 LIVERMORE AVE & EAST AVE AM
Date: Wednesday, May 28, 2025
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

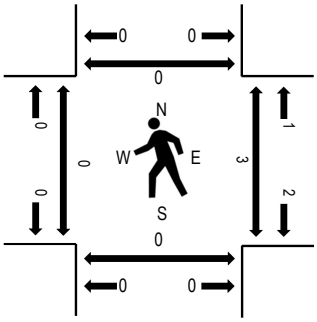
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SOUTH H STREET Eastbound				EAST AVE Westbound				LIVERMORE AVE Northbound				LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	0	0	80	0	0	51	0	0	56	15	0	202	1,022	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	95	0	0	63	0	0	59	21	1	239	1,251	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	74	0	0	52	0	0	71	27	1	225	1,401	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	104	0	0	80	0	0	117	53	2	356	1,599	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	124	0	0	96	0	0	141	70	0	431	1,587	0	1	0	0
8:15 AM	0	0	0	0	0	0	0	137	0	0	92	0	0	128	31	1	389		0	1	0	0
8:30 AM	0	0	0	0	0	0	0	151	0	0	82	1	0	148	36	5	423		0	1	0	0
8:45 AM	0	0	0	0	0	0	0	117	0	0	63	1	0	109	45	9	344		0	1	0	0

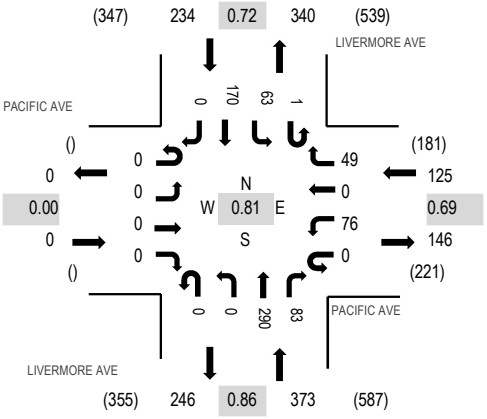
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Lights	0	0	0	0	0	0	0	513	0	0	345	1	0	529	189	8	1,585
Mediums	0	0	0	0	0	0	0	3	0	0	5	0	0	4	1	0	13
Total	0	0	0	0	0	0	0	516	0	0	350	1	0	534	190	8	1,599

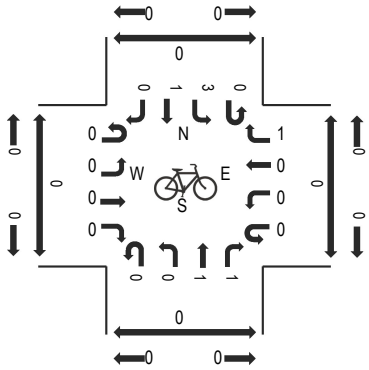
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 LIVERMORE AVE & PACIFIC AVE AM
Date: Wednesday, May 28, 2025
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

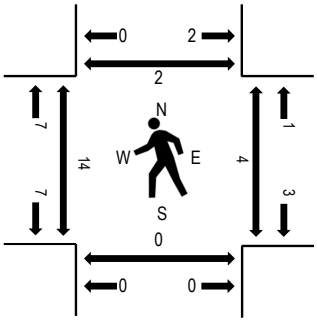
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE Eastbound				PACIFIC AVE Westbound				LIVERMORE AVE Northbound				LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	4	0	9	0	0	31	8	0	6	10	0	68	421	2	0	0	0
7:15 AM	0	0	0	0	0	5	0	6	0	0	53	12	0	4	13	0	93	579	0	0	1	0
7:30 AM	0	0	0	0	0	9	0	8	0	0	42	6	0	8	29	0	102	671	0	2	0	0
7:45 AM	0	0	0	0	0	6	0	15	0	0	64	12	0	14	47	0	158	732	1	0	0	0
8:00 AM	0	0	0	0	0	30	0	15	0	0	69	31	1	21	59	0	226	694	4	2	0	1
8:15 AM	0	0	0	0	0	19	0	9	0	0	79	29	0	16	33	0	185		4	1	0	0
8:30 AM	0	0	0	0	0	21	0	10	0	0	78	11	0	12	31	0	163		5	1	0	1
8:45 AM	0	0	0	0	0	10	0	5	0	0	45	17	0	14	29	0	120		2	0	0	0

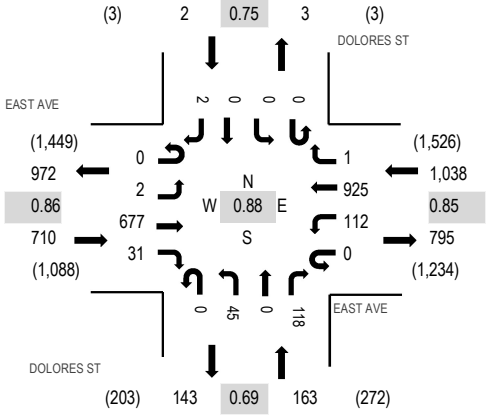
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	75	0	47	0	0	287	81	1	62	169	0	722
Mediums	0	0	0	0	0	1	0	2	0	0	3	2	0	1	1	0	10
Total	0	0	0	0	0	76	0	49	0	0	290	83	1	63	170	0	732

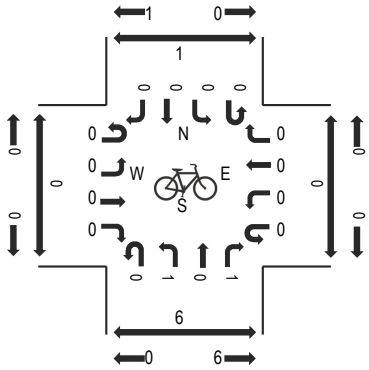
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 DOLORES ST & EAST AVE AM
Date: Wednesday, May 28, 2025
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:30 AM - 08:45 AM

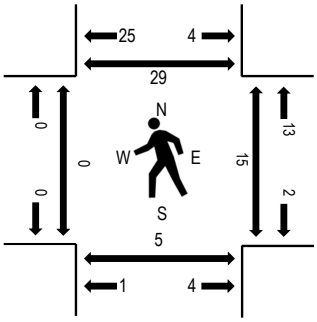
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	EAST AVE Eastbound				EAST AVE Westbound				DOLORES ST Northbound				DOLORES ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	1	0	64	2	0	12	88	0	0	9	0	14	0	0	0	0	190	976	0	0	0	0
7:15 AM	0	0	75	3	0	9	109	0	0	8	0	22	0	0	0	0	226	1,278	0	0	0	0
7:30 AM	0	0	88	3	0	13	115	0	0	9	0	11	0	0	0	0	239	1,587	0	1	0	1
7:45 AM	0	0	139	3	0	15	127	0	0	11	0	25	0	1	0	0	321	1,890	0	0	0	0
8:00 AM	0	1	159	4	0	43	237	0	0	12	0	35	0	0	0	1	492	1,913	0	1	3	3
8:15 AM	0	0	178	6	0	25	262	0	0	15	0	49	0	0	0	0	535		0	5	2	14
8:30 AM	0	1	188	18	0	24	279	1	0	11	0	19	0	0	0	1	542		0	6	0	9
8:45 AM	0	0	152	3	0	20	147	0	0	7	0	15	0	0	0	0	344		0	3	0	3

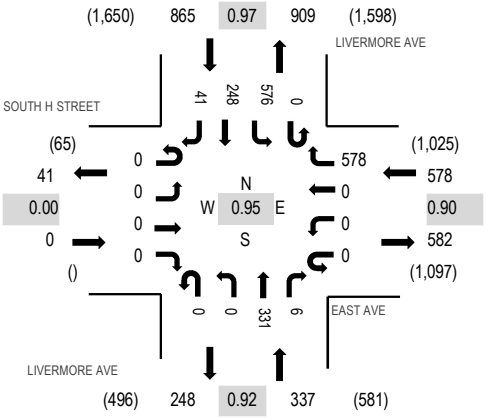
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Lights	0	2	670	30	0	111	918	1	0	43	0	117	0	0	0	2	1,894
Mediums	0	0	6	1	0	0	7	0	0	2	0	1	0	0	0	0	17
Total	0	2	677	31	0	112	925	1	0	45	0	118	0	0	0	2	1,913

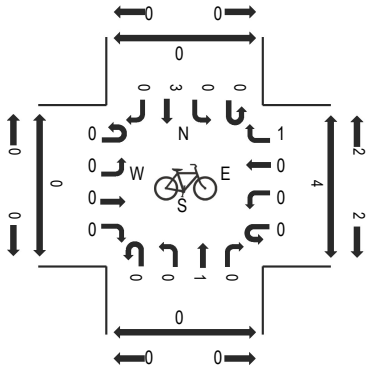
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 LIVERMORE AVE & EAST AVE PM
Date: Wednesday, May 28, 2025
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

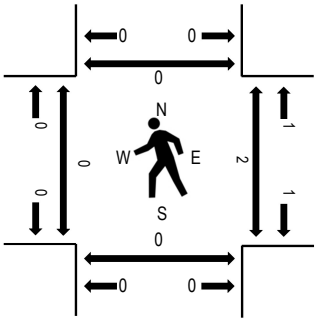
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SOUTH H STREET Eastbound				EAST AVE Westbound				LIVERMORE AVE Northbound				LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	0	0	94	0	0	55	0	0	113	62	4	328	1,562	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	115	0	0	61	1	0	129	69	7	382	1,694	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	136	0	0	86	2	0	121	60	2	407	1,780	0	1	0	0
4:45 PM	0	0	0	0	0	0	0	128	0	0	91	1	0	152	64	9	445	1,771	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	154	0	0	77	1	0	148	64	16	460	1,694	0	1	0	0
5:15 PM	0	0	0	0	0	0	0	160	0	0	77	2	0	155	60	14	468		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	112	0	0	81	0	0	146	54	5	398		0	2	0	0
5:45 PM	0	0	0	0	0	0	0	126	0	0	45	1	0	125	63	8	368		0	3	0	0

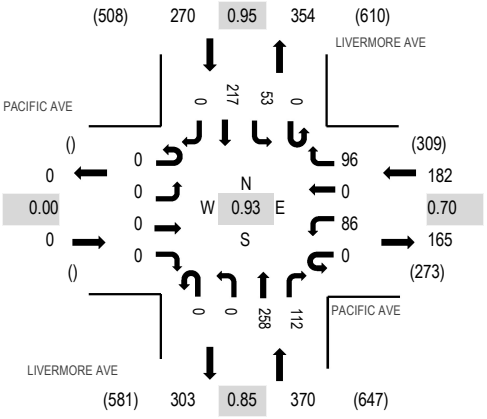
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	0	0	576	0	0	329	6	0	574	242	41	1,768
Mediums	0	0	0	0	0	0	0	2	0	0	2	0	0	2	6	0	12
Total	0	0	0	0	0	0	0	578	0	0	331	6	0	576	248	41	1,780

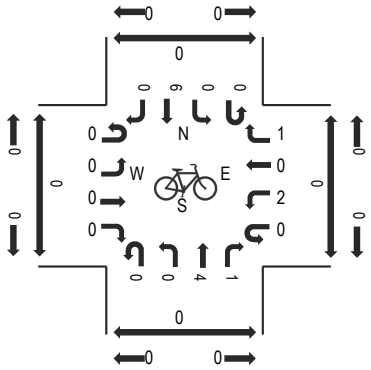
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 LIVERMORE AVE & PACIFIC AVE PM
Date: Wednesday, May 28, 2025
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

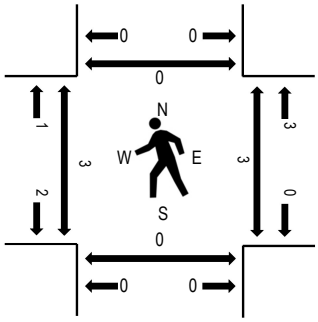
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE Eastbound				PACIFIC AVE Westbound				LIVERMORE AVE Northbound				LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	21	0	8	0	0	51	28	0	7	54	0	169	789	1	1	0	0
4:15 PM	0	0	0	0	0	16	0	16	0	0	60	22	0	15	53	0	182	822	0	1	0	0
4:30 PM	0	0	0	0	0	15	0	22	0	0	79	31	0	17	54	0	218	808	1	0	0	0
4:45 PM	0	0	0	0	0	26	0	20	0	0	66	37	0	11	60	0	220	751	1	2	0	0
5:00 PM	0	0	0	0	0	29	0	38	0	0	53	22	0	10	50	0	202	675	1	0	0	0
5:15 PM	0	0	0	0	0	15	0	22	0	0	56	14	0	16	45	0	168		0	1	0	0
5:30 PM	0	0	0	0	0	17	0	13	0	0	59	14	0	5	53	0	161		0	2	0	0
5:45 PM	0	0	0	0	0	23	0	8	0	0	39	16	0	8	50	0	144		0	1	0	0

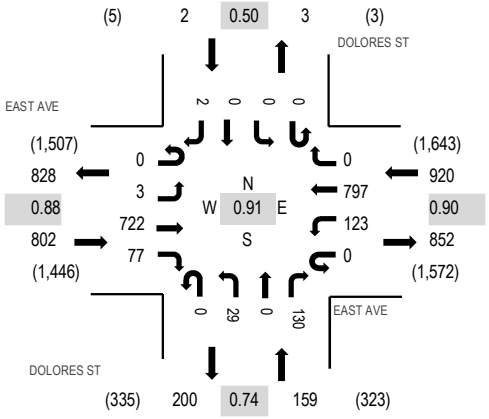
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Lights	0	0	0	0	0	86	0	95	0	0	257	112	0	52	215	0	817
Mediums	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	0	4
Total	0	0	0	0	0	86	0	96	0	0	258	112	0	53	217	0	822

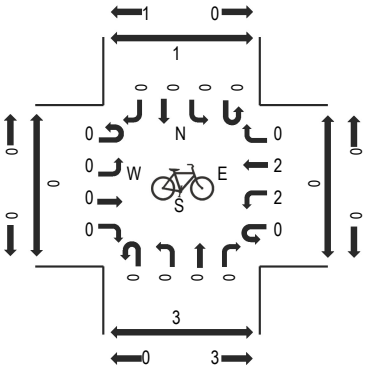
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 DOLORES ST & EAST AVE PM
Date: Wednesday, May 28, 2025
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

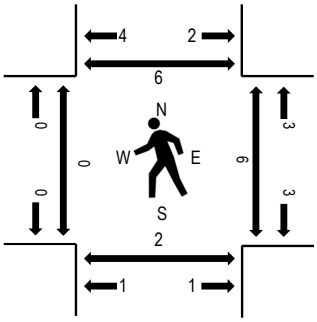
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	EAST AVE Eastbound				EAST AVE Westbound				DOLORES ST Northbound				DOLORES ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	147	9	0	26	133	0	0	11	0	31	0	0	0	0	357	1,665	0	1	0	0
4:15 PM	0	0	163	12	0	21	168	0	0	9	0	32	0	0	0	0	405	1,812	0	2	0	1
4:30 PM	1	0	140	12	0	14	174	0	0	11	0	34	0	0	0	1	387	1,868	0	1	0	3
4:45 PM	0	1	173	20	0	31	224	0	0	12	0	55	0	0	0	0	516	1,883	0	2	2	1
5:00 PM	0	1	205	22	0	33	196	0	0	6	0	40	0	0	0	1	504	1,752	0	2	0	1
5:15 PM	0	0	179	17	0	24	210	0	0	8	0	22	0	0	0	1	461		0	2	0	3
5:30 PM	0	1	165	18	0	35	167	0	0	3	0	13	0	0	0	0	402		0	0	0	1
5:45 PM	0	0	150	10	0	31	156	0	0	13	0	23	0	0	0	2	385		0	3	0	4

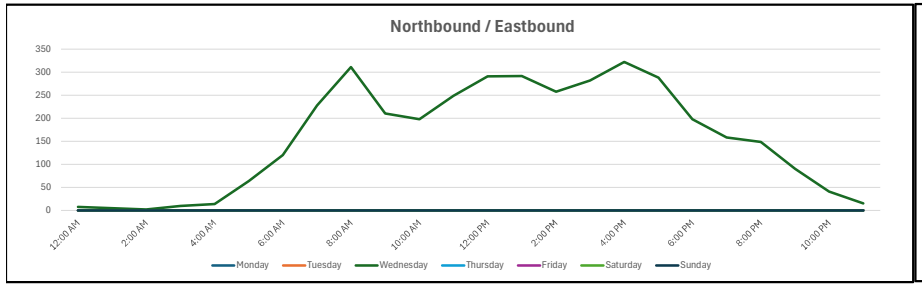
Peak Rolling Hour Flow Rates

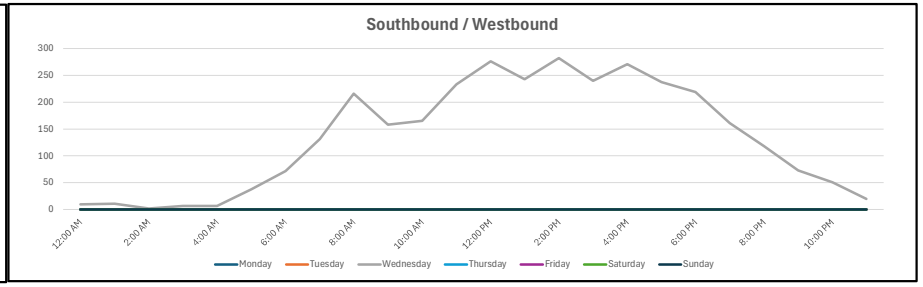
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Lights	0	3	715	75	0	121	794	0	0	28	0	130	0	0	0	2	1,868
Mediums	0	0	7	2	0	1	3	0	0	1	0	0	0	0	0	0	14
Total	0	3	722	77	0	123	797	0	0	29	0	130	0	0	0	2	1,883

Vehicle Volume Report - Hourly

Site Description: S Livermore Ave N.O Pacific Ave
Site Number: 4
Start Date: 05/28/2025
End Date: 05/28/2025

Time	Monday			Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			3 Day Avg		5 Day Avg		7 Day Avg	
	6/2/25			6/3/25			5/28/25			5/29/25			5/30/25			5/31/25			6/1/25			Tue-Thu		Mon-Fri		Mon-Sun	
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	NB	SB	NB	SB
12:00 AM	-	-	-	-	-	-	8	10	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	5	11	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 AM	-	-	-	-	-	-	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 AM	-	-	-	-	-	-	10	7	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 AM	-	-	-	-	-	-	14	7	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:00 AM	-	-	-	-	-	-	64	38	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM	-	-	-	-	-	-	120	72	192	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:00 AM	-	-	-	-	-	-	228	131	359	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:00 AM	-	-	-	-	-	-	311	216	527	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:00 AM	-	-	-	-	-	-	210	158	368	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:00 AM	-	-	-	-	-	-	198	165	363	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	-	-	-	-	-	-	249	233	482	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12:00 PM	-	-	-	-	-	-	291	276	567	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1:00 PM	-	-	-	-	-	-	292	243	535	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	-	-	-	-	-	-	258	282	540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	-	-	-	-	-	-	282	240	522	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	-	-	-	-	-	-	322	271	593	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:00 PM	-	-	-	-	-	-	288	237	525	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 PM	-	-	-	-	-	-	198	219	417	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:00 PM	-	-	-	-	-	-	158	161	319	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:00 PM	-	-	-	-	-	-	149	118	267	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:00 PM	-	-	-	-	-	-	90	73	163	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:00 PM	-	-	-	-	-	-	41	51	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	15	20	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM - 9:00 AM	**-**	**-**	**-**	**-**	**-**	**-**	**659**	**419**	**1078**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3:00 PM - 6:00 PM	**-**	**-**	**-**	**-**	**-**	**-**	**892**	**748**	**1640**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
6:00 AM - 7:00 PM	**-**	**-**	**-**	**-**	**-**	**-**	**3247**	**2743**	**5990**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
12:00 AM - 12:00 AM	**-**	**-**	**-**	**-**	**-**	**-**	**3803**	**3241**	**7044**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Percent	**-**	**-**	**-**	**-**	**-**	**-**	***54.0%***	***46.0%***	***100.0%***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
AM Peak	**-**	**-**		**-**	**-**		**8:00 AM**	**9:00 AM**		**-**	**-**		**-**	**-**		**-**	**-**		**-**	**-**							
PM Peak	**-**	**-**		**-**	**-**		**4:00 PM**	**5:00 PM**		**-**	**-**		**-**	**-**		**-**	**-**		**-**	**-**							

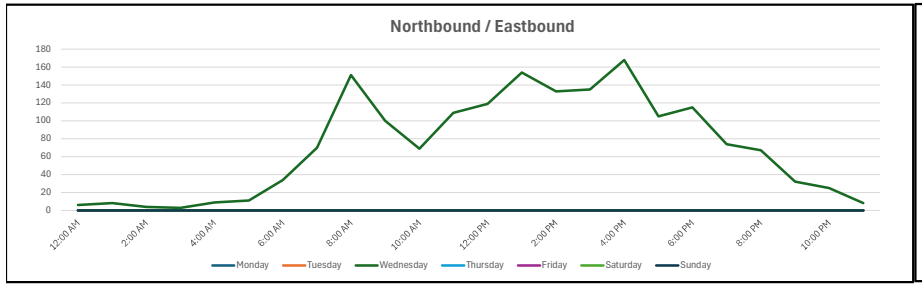


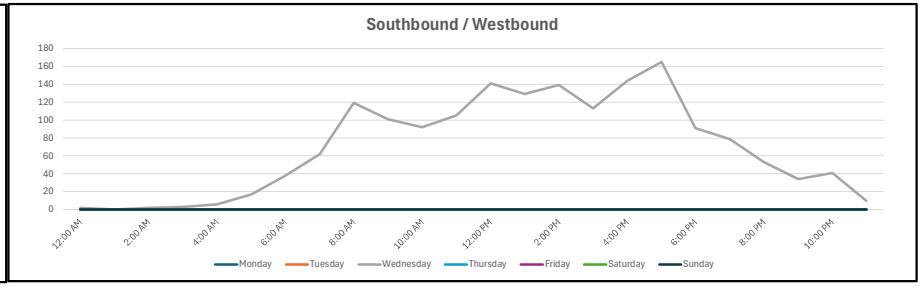


Vehicle Volume Report - Hourly

Site Description: Pacific Ave E.O S Livermore Ave
Site Number: 5
Start Date: 05/28/2025
End Date: 05/28/2025

Time	Monday			Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			3 Day Avg		5 Day Avg		7 Day Avg	
	6/2/25			6/3/25			5/28/25			5/29/25			5/30/25			5/31/25			6/1/25			Tue-Thu		Mon-Fri		Mon-Sun	
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	EB	WB	EB	WB
12:00 AM	-	-	-	-	-	-	6	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	8	0	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 AM	-	-	-	-	-	-	4	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 AM	-	-	-	-	-	-	3	3	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 AM	-	-	-	-	-	-	9	6	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:00 AM	-	-	-	-	-	-	11	17	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM	-	-	-	-	-	-	34	38	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:00 AM	-	-	-	-	-	-	70	62	132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:00 AM	-	-	-	-	-	-	151	119	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:00 AM	-	-	-	-	-	-	100	101	201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:00 AM	-	-	-	-	-	-	69	92	161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	-	-	-	-	-	-	109	105	214	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12:00 PM	-	-	-	-	-	-	119	141	260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1:00 PM	-	-	-	-	-	-	154	129	283	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	-	-	-	-	-	-	133	139	272	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	-	-	-	-	-	-	135	113	248	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	-	-	-	-	-	-	168	144	312	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:00 PM	-	-	-	-	-	-	105	165	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 PM	-	-	-	-	-	-	115	91	206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:00 PM	-	-	-	-	-	-	74	79	153	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:00 PM	-	-	-	-	-	-	67	53	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:00 PM	-	-	-	-	-	-	32	34	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:00 PM	-	-	-	-	-	-	25	41	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	8	10	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM - 9:00 AM	-	-	-	-	-	-	**255**	**219**	**474**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM - 6:00 PM	-	-	-	-	-	-	**408**	**422**	**830**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM - 7:00 PM	-	-	-	-	-	-	**1462**	**1439**	**2901**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12:00 AM - 12:00 AM	-	-	-	-	-	-	**1709**	**1686**	**3395**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent	-	-	-	-	-	-	***50.3%***	***49.7%***	***100.0%***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AM Peak	-	-		-	-		**8:00 AM**	**9:00 AM**		-	-		-	-		-	-		-	-							
PM Peak	-	-		-	-		**4:00 PM**	**5:00 PM**		-	-		-	-		-	-		-	-							





HEXAGON TRANSPORTATION CONSULTANTS, INC.

2930 Pacific Avenue

Transportation Analysis

Prepared for:

SWENSON

January 11, 2024

Hexagon Transportation Consultants, Inc.
Hexagon Office: 100 Century Center Court, Suite 501
San Jose, CA 95112
Hexagon Job Number: 23TD01
Phone: 408.971.6100
Client Name: SWENSON

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Executive Summary

This report presents the results of the Transportation Analysis (TA) conducted for the proposed residential development at 2930 Pacific Avenue in Livermore, California. The project site is currently occupied by the Livermore Town Center, a shopping center that is surrounded by South Livermore Avenue on the west, Pacific Street on the south, Dolores Street on the east and existing residential development on the north. As proposed, the project would include demolishing the existing commercial buildings (totaling 66,617 sq. ft) and constructing a residential community with 115 townhouses. The main vehicular access will be provided via a full access unsignalized driveway on Pacific Avenue. Secondary access will be provided on the back side of the project on Dolores Street. The existing shopping center is served by five driveways and the proposed project would reduce the driveways to two main access driveways and three Emergency Vehicle Access (EVA) driveways.

The proposed uses are consistent with the land use designation for the project site parcel in the City of Livermore General Plan and would not require a general plan amendment. The project site is zoned as "Neighborhood Mixed Use (NMU)", which allows both housing and commercial/retail development. Thus, the proposed use is consistent with the general plan land use designation for the project site.

VMT Analysis

The Alameda County Transportation Commission (CTC) has developed maps and tables that display estimates of VMT per Capita and per Employee at the Traffic Analysis Zone (TAZ) level and planning area level in Alameda County. These TAZ estimates come from the Alameda Countywide Travel Demand Model that is consistent with Plan Bay Area 2040.

The Alameda County East Planning Area encompasses the cities of Livermore, Dublin, and Pleasanton. Using the Alameda County VMT Mapping Resources, the VMT per capita for the project TAZ is 24.43, which is less than the threshold of 25.93 VMT per capita for the Alameda County East Planning Area. Therefore, the proposed project would have a less than significant impact on VMT.

Project Trip Generation

Trip generation estimates for the proposed project were based on trip rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 11th Edition for "Single-Family Attached Housing" (Land Use 215) located in a general Urban/Suburban area. After applying the existing trip credits based on AM and PM peak hour driveway counts, the net new project trips would be 138 daily trips including 11 net trips during the AM peak hour and 28 fewer trips during the PM peak hour. The existing trip credits reflect more than 60% of the shopping center being vacant. Thus, compared to the

trips that could be generated by the shopping center at full occupancy, the proposed residential development would generate fewer daily, AM and PM peak hour trips.

Intersection Level of Service Analysis

The results of the intersection level of service analysis (see Table ES-1) show that all study intersections would operate at an acceptable level of service D or better with and without the project.

Roadway Segment Level of Service Analysis

The results of the roadway segment level of service analysis (see Table ES-2) show that all study segments would operate at an acceptable level of service A with and without the project.

Intersection Queuing Analysis

Vehicle queuing was evaluated using Synchro software for selected locations where the project would add 10 or more left-turning vehicles. The results of the intersection queuing analysis indicate that the project would not cause or exacerbate queuing deficiencies.

Other Transportation Issues

Generally, the preliminary site plan shows adequate site access, and the proposed project would not have an adverse effect on the existing transit services, pedestrian facilities, or bicycle facilities in the study area. Hexagon provides the following recommendations for the proposed project:

1. In order to provide adequate sight distance for vehicles exiting the project site, Hexagon recommends installing a minimum 25 feet of red curb to the east and west of the driveway on Pacific Avenue and 25 feet of red curb to the north and south of the driveway on Dolores Street based on the stopping sight distance standards in the California Manual on Uniform Traffic Control Devices (CA MUTCD).
2. Hexagon recommends including a turnaround space for residential guests at the end of the parking aisle in the southeast corner of the project site, adjacent to the EVA access on Dolores Street.
3. Prior to final design parking stall dimensions should be reviewed by City staff.

Table ES- 1
Intersection Level of Service Summary

					Existing			Background		Background Plus Project			Cumulative		Cumulative Plus Project		
ID	Intersection	Control[1]	Peak Hour	Count Date	Avg. Delay	Avg. Delay[2]	LOS	Avg. Delay[2]	LOS	Avg. Delay[2]	LOS	Incr. in delay	Avg. Delay[2]	LOS	Avg. Delay[2]	LOS	Incr. in delay
1	S. Livermore Ave and Fourth St	Signal	AM	01/26/23	24.3	24.3	C	24.9	C	24.9	C	0.0	32.4	C	32.5	C	0.1
			PM	01/26/23	31.5	31.5	C	31.9	C	31.9	C	0.0	42.0	D	42.7	D	0.7
2	S. Livermore Ave and East Ave	Signal	AM	01/26/23	23.9	23.9	C	24.7	C	24.7	C	0.0	36.0	D	36.3	D	0.3
			PM	01/26/23	25.1	25.1	C	26.0	C	26.0	C	0.0	35.6	D	35.6	D	0.0
3	S. Livermore Ave and Palm Ave	TWSC	AM	01/26/23	11.3	11.3	B	11.2	B	10.8	B	-0.4	13.3	B	12.5	B	-0.8
			PM	01/26/23	13.8	13.8	B	14.3	B	13.5	B	-0.8	17.8	C	16.6	C	-1.2
4	S. Livermore Ave and Pacific Ave	OWSC	AM	01/26/23	15.5	15.5	C	16.3	C	16.7	C	0.3	27.8	D	29.6	D	1.8
			PM	01/26/23	14.8	14.8	B	15.4	C	15.8	C	0.4	23.2	D	24.5	D	1.3
5	Dolores St and Pacific Ave	AWSC	AM	01/26/23	8.3	8.3	A	8.4	A	8.5	A	0.1	9.1	A	9.3	A	0.2
			PM	01/26/23	8.4	8.4	A	8.5	A	8.5	A	0.0	9.1	A	9.2	A	0.1
6	Dolores St and East Ave	Signal	AM	05/17/23	21.0	21.0	B	22.6	B	21.3	B	-1.3	25.3	B	24.6	B	-0.7
			PM	05/17/23	13.2	13.2	B	13.7	B	13.6	B	-0.1	19.8	B	19.4	B	-0.4
7	Project Dwy and Pacific Ave	OWSC	AM	01/26/23	#REF!	--	-- --	--	--	9.5	A	--	--	--	9.9	B	--
			PM	01/26/23	#REF!	--	-- --	--	--	9.8	A	--	--	--	10.3	B	--
8	Dolores St and Project Dwy	OWSC	AM	01/26/23	#REF!	--	-- --	--	--	9.3	A	--	--	--	9.7	A	--
			PM	01/26/23	#REF!	--	-- --	--	--	9.6	A	--	--	--	10.0	B	--

Notes:
1. Control Type Definitions: OWSC = One-Way Stop Control, TWSC = Two-Way Stop Control, AWSC = All-Way Stop Control.
2. Delay/LOS based on HCM 7th methodology. Intersections (1 and 2) that were not supported by HCM 7th methodology, HCM 2000 was used. Intersection level of service for OWSC and TWSC intersections is represented by the delay for the worst approach. Intersection level of service for all other control types is represented by average delay for all movements.

Table ES- 2
Roadway Segment Level of Service Summary

	Existing					Background			Background Plus Project			Cumulative			Cumulative Plus Project		
Roadway Segment	ADT	# of Lanes	Daily Capacity	V/C Ratio	LOS	ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS
Pacific Ave between S. Livermore Ave and Dolores St	3,157	2	10,000	0.3157	A	3,301	0.1651	A	3,381	0.1691	A	4,381	0.21903	A	4,461	0.2230	A
S. Livermore Ave between Palm Ave and 8th St	6,424	2	20,000	0.3212	A	6,717	0.3359	A	6,777	0.3389	A	8,914	0.4457	A	8,974	0.4487	A

1. Introduction

This report presents the results of the Transportation Analysis (TA) conducted for the proposed residential development at 2930 Pacific Avenue in Livermore, California. The project site is currently occupied by the Livermore Town Center, a shopping center that is surrounded by South Livermore Avenue on the west, Pacific Street on the south, Dolores Street on the east and existing residential development on the north. As proposed, the project would include demolishing the existing commercial buildings (totaling 66,617 sq. ft) and constructing a residential community with 115 townhouses. The main vehicular access will be provided via a full access unsignalized driveway on Pacific Avenue. Secondary access will be provided on the back side of the project on Dolores Street. The existing shopping center is served by five driveways and the proposed project would reduce the driveways to two main access driveways and three Emergency Vehicle Access (EVA) driveways (one driveway on Livermore Avenue and two driveways on Dolores Street).

The proposed uses are consistent with the land use designation for the project site parcel in the City of Livermore General Plan and would not require a general plan amendment. The project site is zoned as “Neighborhood Mixed Use (NMU)”, which allows both housing and commercial/retail development. Thus, the proposed use is consistent with the general plan land use designation for the project site.

The project site and the surrounding study area are shown on Figure 1. The proposed site plan is shown on Figure 2.

Scope of Study

The purpose of the transportation analysis is to identify any transportation impacts in accordance with the standards set forth by City of Livermore and Alameda County Transportation Commission (Alameda CTC). Alameda CTC administers the County’s Congestion Management Program (CMP). An Alameda County CMP analysis was not required because the net project trip generation would be fewer than 100 peak hour vehicle trips.

This report includes an evaluation of transportation impacts according to CEQA and a Local Transportation Analysis (LTA) per the City of Livermore Scope of Work for Traffic Impact Analysis requirements dated 02/25/2019.

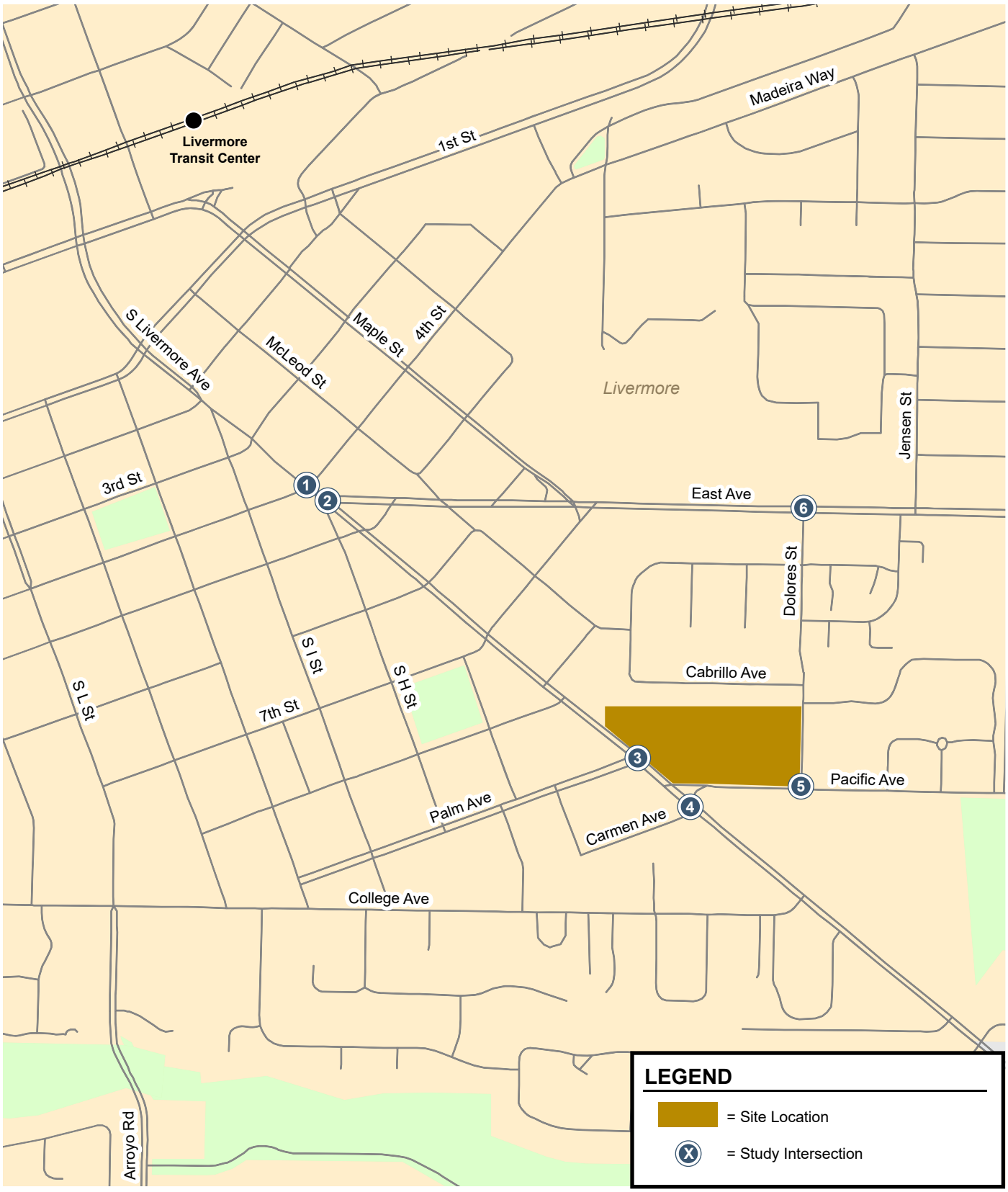
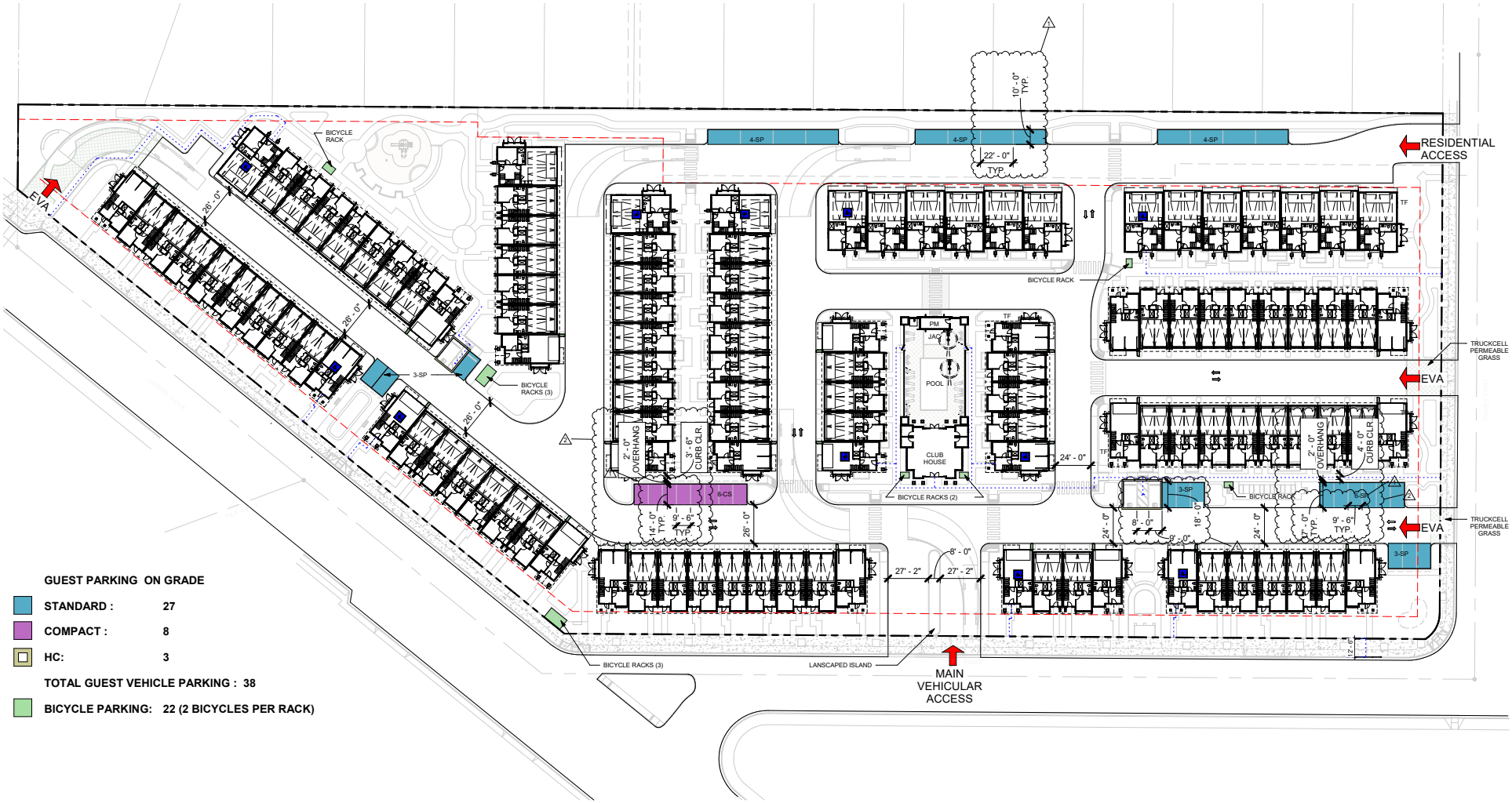


Figure 1
Site Location and Study Intersections

NORTH
Not to Scale



GUEST PARKING ON GRADE

STANDARD :	27
COMPACT :	8
HC:	3
TOTAL GUEST VEHICLE PARKING :	38
BICYCLE PARKING:	22 (2 BICYCLES PER RACK)

Figure 2
Project Site Plan

HEXAGON

NORTH
Not to Scale

CEQA Analysis

Vehicle Miles Traveled Standards and Analysis Methodology

Senate Bill (SB) 743, signed into law in 2013, requires CEQA lead agencies to shift from using traditional Level of Service (LOS) standards and automobile delay to Vehicle Miles Traveled (VMT) in order to determine significant traffic impacts. SB 743 requires lead agencies to implement its guidelines, requiring them to select a VMT methodology, choose significance thresholds, and determine feasible mitigation measures. The goal of SB 743 is to encourage development that reduces VMT. Since the City of Livermore has not yet adopted a policy or established any thresholds based on VMT, the potential impacts of this project were determined based upon the Governor's Office of Planning & Research (OPR)'s recommendations in the December 2018 *Technical Advisory on Evaluation of Transportation Impacts in CEQ*A document.

Local Transportation Analysis

The potential adverse effects of the project were evaluated in accordance with the standards set forth by the City of Livermore. The traffic study includes an analysis of AM and PM peak-hour traffic conditions for six intersections and two roadway segments in the vicinity of the project site. The study also includes an analysis of transit, bicycle, and pedestrian access. The study intersections and roadway segments are identified below.

Study Intersections:

1. S. Livermore Avenue & Fourth Street (signal)
2. S. Livermore Avenue & East Avenue (signal)
3. S. Livermore Avenue & Palm Avenue (unsignalized)
4. S. Livermore Avenue & Pacific Avenue (unsignalized)
5. Dolores Street & Pacific Avenue (unsignalized)
6. East Avenue & Dolores Street (signal)

Roadway Segments:

1. S. Livermore Avenue – between Palm Avenue and Eighth Street
2. Pacific Avenue – between S. Livermore Avenue and Dolores Street

Traffic conditions at the study intersections were analyzed for both the weekday AM and PM peak hours of adjacent street traffic. The AM peak hour is expected to occur between 7:00 AM and 9:00 AM and the PM peak hour is expected to occur between 4:00 PM and 6:00 PM on a regular weekday. These are the peak commute hours during which most traffic congestion occurs on the roadways.

Traffic conditions were evaluated for the following scenarios:

Scenario 1: *Existing Conditions.* Existing conditions were represented by existing peak-hour traffic volumes on the existing roadway network. Existing traffic volumes were obtained from new traffic counts conducted in January 2023.

Scenario 2: *Background Conditions*. Background conditions are defined as conditions just prior to completion of the proposed development. Based on coordination with Livermore City staff, there are no approved projects in the study area. Therefore, annual growth factors based on the Alameda County Travel Demand Model were applied to the existing 2023 volumes for a period of three years to estimate the background traffic volumes.

Scenario 3: *Project Conditions*. Project-generated traffic volumes were added to background traffic volumes to estimate background plus project conditions (also referred to as Project Conditions). Project conditions were evaluated relative to background conditions in order to identify substantial adverse effects from the proposed project.

Scenario 4: *Cumulative Conditions*. Cumulative conditions represent the future conditions (year 2045) with expected growth in the area. Cumulative traffic volumes were estimated by applying a growth factor to existing volumes. The growth factor was estimated based on available year 2040 forecasts from the Alameda County travel demand forecast model. The annual growth factors were applied to the 2023 volumes over a period of 22 years to estimate Year 2045 volumes.

Scenario 5: *Cumulative plus Project Conditions*. Cumulative plus project conditions were estimated by adding to the cumulative traffic volumes the additional traffic estimated to be generated by the proposed project. Cumulative plus project conditions were evaluated relative to cumulative conditions to identify substantial adverse effects from the proposed project.

Methodology

This section presents the methods used to determine the traffic conditions at study intersections for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards.

Data Requirements

The data required for the analysis were obtained from new traffic counts, previous traffic studies, the City of Livermore, and field observations. The following data were collected from these sources:

- Existing traffic volumes
- Existing lane configurations
- Signal timing and phasing
- Previous traffic studies, and
- Year 2040 traffic volumes from the Alameda County travel demand forecast model

Level of Service Standards and Analysis Methodologies

Traffic conditions at the study intersections were evaluated using level of service (LOS). *Level of Service* is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The various analysis methods are described below.

City of Livermore Intersections

The City of Livermore evaluates level of service at signalized intersections based on the Highway Capacity Manual (HCM) level of service methodology using Synchro software. The HCM method evaluates signalized intersection operations based on average control delay time for all vehicles at the intersection.

This study uses the HCM 7th Edition for signalized and unsignalized intersections utilizing Synchro software to determine intersection level of service. The two signalized intersections on S. Livermore Avenue were observed to operate with one controller and thus were analyzed as clustered intersections

in Synchro. Since the HCM 7th edition does not support the analysis of clustered intersections, the HCM 2000 methodology was used.

The HCM method evaluates intersection operations on the basis of average control delay time for all vehicles at the intersection. This average delay can then be correlated to a level of service. Table 1 presents the level of service definitions for signalized intersections. The level of service definitions for unsignalized intersections are presented in Table 2. Note that for unsignalized intersections under two-way or side-street stop control, the level of service is reported for the worst approach.

City of Livermore Roadway Segments

Roadway segment levels of service were calculated by comparing the daily roadway volumes to the LOS thresholds used for other projects in Livermore and other communities within Alameda County, as shown in Table 3. For major streets a per-lane capacity of 800 vehicles per hour and 10,000 vehicles per day and for local streets, 400 vehicles per hour and 5,000 vehicles per day was used. The City of Livermore does not have a level of service policy for daily roadway segment operations.

Table 1
Signalized Intersection Level of Service Definitions Based on Control Delay

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though some vehicles may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	greater than 80.0

Source: Transportation Research Board, *Highway Capacity Manual 6th Edition* (Washington, D.C., 2016), p.16-19.

Table 2
Unsignalized Intersection Level of Service Definitions Based on Delay

Level of Service	Description	Average Delay Per Vehicle (Sec.)
A	Little or no traffic delay	10.0 or less
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays	greater than 50.0

Source: Transportation Research Board, *Highway Capacity Manual 6th Edition* (Washington D.C., 2016).

Table 3
Roadway Segment LOS Thresholds

LOS	Density
A	<0.6
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	>1.00

Source: Lassen Road Residential Project TIA by Fehr & Peers, 2018

Substantial Adverse Effect Criteria

The criteria used to establish what constitutes an adverse effect by the project is discussed below. Adverse effects on intersections are based on the level of service standards of the jurisdiction in which the intersection is located. For this analysis, criteria for adverse effects on signalized and unsignalized intersections are based on the City of Livermore level of service standards as described below. As the City of Livermore does not have a level of service policy for daily roadway segment operations, the adverse effect of the project on roadway segments are based on the criteria used in other transportation analysis studies in Livermore.

Signalized Intersections

The project may cause an adverse effect if one of the two following criteria are met:

- The addition of project traffic to an intersection, results in the degradation of intersection operations from acceptable operations (Mid-level LOS D or better) to unacceptable operations (Greater than Mid-level LOS D; LOS E or F).

- At an intersection projected to operate at unacceptable LOS prior to the addition of project traffic, the addition of project traffic increases the average control delay by five (5) seconds or more.

Unsignalized Intersections

The project may cause an adverse effect if one of the two following criteria are met:

- The addition of project traffic to an intersection, results in the degradation of intersection operations from acceptable operations (Mid-level LOS D or better) to unacceptable operations (Greater than Mid-level LOS D; LOS E or F).
- The Peak Hour Signal Warrant (Warrant 3) is met.

Roadway Segment

The project may cause an adverse effect if one of the two following criteria are met:

- The addition of project traffic to a roadway segment results in the degradation of the segment from acceptable operations (Mid-level LOS D or better) to unacceptable operations (Greater than Mid-level LOS D; LOS E or F).
- On a roadway segment that is projected to operate at unacceptable LOS prior to the addition of project traffic, the addition of project traffic to a roadway segment results in the exacerbation of unacceptable operations by increasing the average daily volume by more than 5 percent.

Report Organization

The remainder of this report is divided into four chapters. Chapter 2 presents the CEQA impact analysis. Chapter 3 presents the local transportation analysis including the description of the existing roadway network, transit service, bicycle and pedestrian facilities as well as traffic conditions in the study area under existing, background, background plus project, cumulative, cumulative plus project, and recommended improvements. Chapter 4 provides an evaluation of other transportation-related issues, such as site access, on-site circulation, parking, potential project adverse effects on bicycle, pedestrian, and transit facilities, roadway segment analysis, and an evaluation of vehicle queuing.

2. Vehicle Miles Traveled

Vehicle Miles Traveled (VMT)

Senate Bill (SB) 743 changed the way transportation impacts are identified under CEQA from vehicle level of service (LOS) to daily vehicle miles traveled (VMT). Since the City of Livermore has not yet adopted a policy or established any thresholds based on VMT, the potential impacts of this project were determined based upon the Governor's Office of Planning & Research (OPR)'s recommendations.

Residential VMT

The Alameda County Transportation Commission (CTC) has developed maps and tables that display estimates of VMT per Capita and per Employee at the Traffic Analysis Zone (TAZ) level and planning area level in Alameda County. These TAZ estimates come from the Alameda Countywide Travel Demand Model that is consistent with Plan Bay Area 2040. For the proposed residential use, the VMT per capita for the TAZ in which the project site is located is compared to the following threshold:

- 15 percent below the Alameda County East Planning Area Year 2020 average of 30.5 VMT per capita, which calculates to a VMT per capita of 25.9.

The Alameda County East Planning Area encompasses the cities of Livermore, Dublin, and Pleasanton. Using the Alameda County VMT Mapping Resources, the VMT per capita for the project TAZ is 24.43, which is less than the threshold of 25.93 VMT per capita. Therefore, the proposed project would have a less than significant impact on VMT.

3. Local Transportation Analysis

This chapter describes the local transportation analysis including existing transportation facilities near the project site and the intersection operations under existing conditions. The chapter also describes the intersection operations analysis under background conditions and cumulative conditions with and without the project. Improvements are recommended for any adverse intersection traffic effects caused by the project.

Existing Conditions

This section describes the existing conditions for all of the major transportation facilities near the site, including the roadway network, transit service, and bicycle and pedestrian facilities.

Roadway Network

Regional access to the project site is provided via I-580.

I-580 is an east-west freeway with four mixed-flow lanes and two express lanes in the eastbound direction, and four mixed-flow lanes and one express lane in the westbound direction within the project vicinity. I-580 provides regional access from Marin County and the east bay cities in Alameda County to San Joaquin County, where it merges with Interstate 5 (I-5). Access to the project study area is provided via its interchange with North Livermore Avenue.

Local access to the site is provided on South Livermore Avenue and Pacific Avenue. Other roadways in the study area include East Avenue, Fourth Street and Dolores Street. These roadways are described below.

South Livermore Avenue is primarily a two-lane, north-south arterial roadway that begins at Railroad Avenue and continues south past Concannon Boulevard, where it becomes Tesla Road. North of Railroad Avenue, it continues as North Livermore Avenue with four lanes and has a full interchange with I-580. North of I-580, it continues as a two-lane roadway up to Manning Road. South Livermore Avenue is located adjacent to the project site and provides direct access to the project site via an existing driveway that is located directly opposite Palm Avenue. The existing driveway on South Livermore Avenue would be converted to an EVA driveway with the redevelopment of the proposed project. Livermore Avenue south of I-580 has been designated as a major street and north of I-580 has been designated as an intercounty route per the City of Livermore General Plan. The speed limit on South Livermore Avenue, near the project site is 30 mph. On Street parking is generally permitted on both sides of the street along South Livermore Avenue except on the east side between Pacific Avenue and Palm Avenue.

Pacific Avenue is primarily a two-lane, east-west roadway that begins at South Livermore Avenue and continues east and ends in a cul-de-sac to the east of Fire Lane. Pacific Avenue is located adjacent to

the project site and would provide primary access to the proposed townhomes via a new driveway. There are no speed limit signs on Pacific Avenue. On-Street parking is generally permitted on both sides of the street except along the frontage of the project site.

East Avenue is primarily a four-lane, east-west arterial roadway that begins at South Livermore Avenue and continues east past Vasco Road to Greenville Road. East Avenue is designated as a major street between South Livermore Avenue and Vasco Road in the City of Livermore General Plan. The posted speed limit on East Avenue is 30 mph. Parking is generally permitted on both sides of East Avenue in the vicinity of the project.

Fourth Street is primarily a four-lane, east-west arterial roadway that begins at Holmes Street and continues east to Inman Road. Fourth Street is designated as a major street in the City of Livermore General Plan. The posted speed limit on Fourth Street is 30 mph. Parking is generally permitted on both sides of the street.

Dolores Street is primarily a two-lane, north-south roadway that begins at Pacific Avenue and extends north to East Avenue. A secondary access for the proposed project's residential townhouse neighborhood will be provided on Dolores Street. There are no speed limit signs on Dolores Street. On-Street parking is generally permitted on both sides of the street.

Existing Pedestrian and Bicycle Facilities

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the project vicinity, sidewalks are provided on both sides of South Livermore Avenue, Pacific Avenue, Dolores Street, and East Avenue. Crosswalks with pedestrian signal heads and push buttons are provided at the signalized intersections of South Livermore Avenue/Fourth Street and South Livermore Avenue/East Avenue. In the immediate vicinity of the project, crosswalks are provided on all approaches at the unsignalized intersection of South Livermore Avenue & Palm Avenue.

According to the Alameda CTC Bicycle Plan and the City of Livermore Active Transportation Plan, there are several designated bikeways within the vicinity of the project site. Bicycle facilities in the City of Livermore can be categorized into different classifications: Class I multi-use trail, Class II bike lane, Class III bike route and Class IV separated bikeway. Class I multi-use trails have a separate right of way exclusive for bicycles and pedestrians. Class II bike lanes are dedicated pavement within a roadway with striping and signage separating bicyclists from motorists. Class III bike routes are signed roadways where the travel lane is wide enough for both bicycles and vehicles and have low traffic volume. Class IV separated bikeways are on-street bicycle lanes that are physically separated from motor vehicle traffic by a vertical element or barrier. Designated bicycle facilities are provided along segments of the following roadways in the study area:

- The existing Class I Arroyo Mocho Trail is a part of a network of multi-use trails in Livermore and links with the city of Pleasanton. The trail provides access to neighborhoods, schools, parks, the business district and municipal facilities. Some sections are immediately adjacent to high-traffic streets, while other segments follow a paved route along the arroyo, removed from traffic. In the vicinity of the project, the Arroyo Trail can be accessed from the east end of Pacific Avenue, approximately 1,800 feet from the project site.
- South Livermore Avenue has Class II bicycle lanes in both directions south of Fifth Street.
- East Avenue is designated as a Class III bike route between South Livermore Avenue and the Livermore Community Center and has Class II bicycle lanes in both directions between the Livermore Community Center and Greenville Road.

The existing bicycle facilities within the study area are shown on Figure 3.

Existing Transit Service

Existing transit service to the study area is provided by the Livermore-Amador Valley Transit Authority (LAVTA). Bus stops within the vicinity of the project site are located along Pacific Avenue, Dolores Street, and East Avenue. LAVTA bus lines with stops within the study area include Route 14 (Local) and Route 30R (Rapid).

Local Route 14 provides service between E. Dublin/Pleasanton BART Station and Livermore Transit Center with 30- to 45-minute headways during peak hours. The bus stops closest to the project site are located along the project frontage on Pacific Avenue and Dolores Street.

The Rapid Route 30R provides service between West Dublin/Pleasanton BART and Sandia Laboratory between 5:07 AM and 10:51 PM with headways of 15-minutes during the peak hours. The bus stops closest to the project site are located on East Avenue near Dolores Street.

The LAVTA bus services and the closest bus stops in the vicinity of the project site are shown on Figure 4.

Existing Intersection Lane Configurations and Traffic Volumes

The existing lane configurations at the study intersections were obtained from previous studies and satellite imagery and are shown on Figure 5.

Existing weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak hour traffic volumes were obtained from new intersection turning movement counts in January and May 2023 (see Figure 6). Traffic count data for intersections are included in Appendix A.

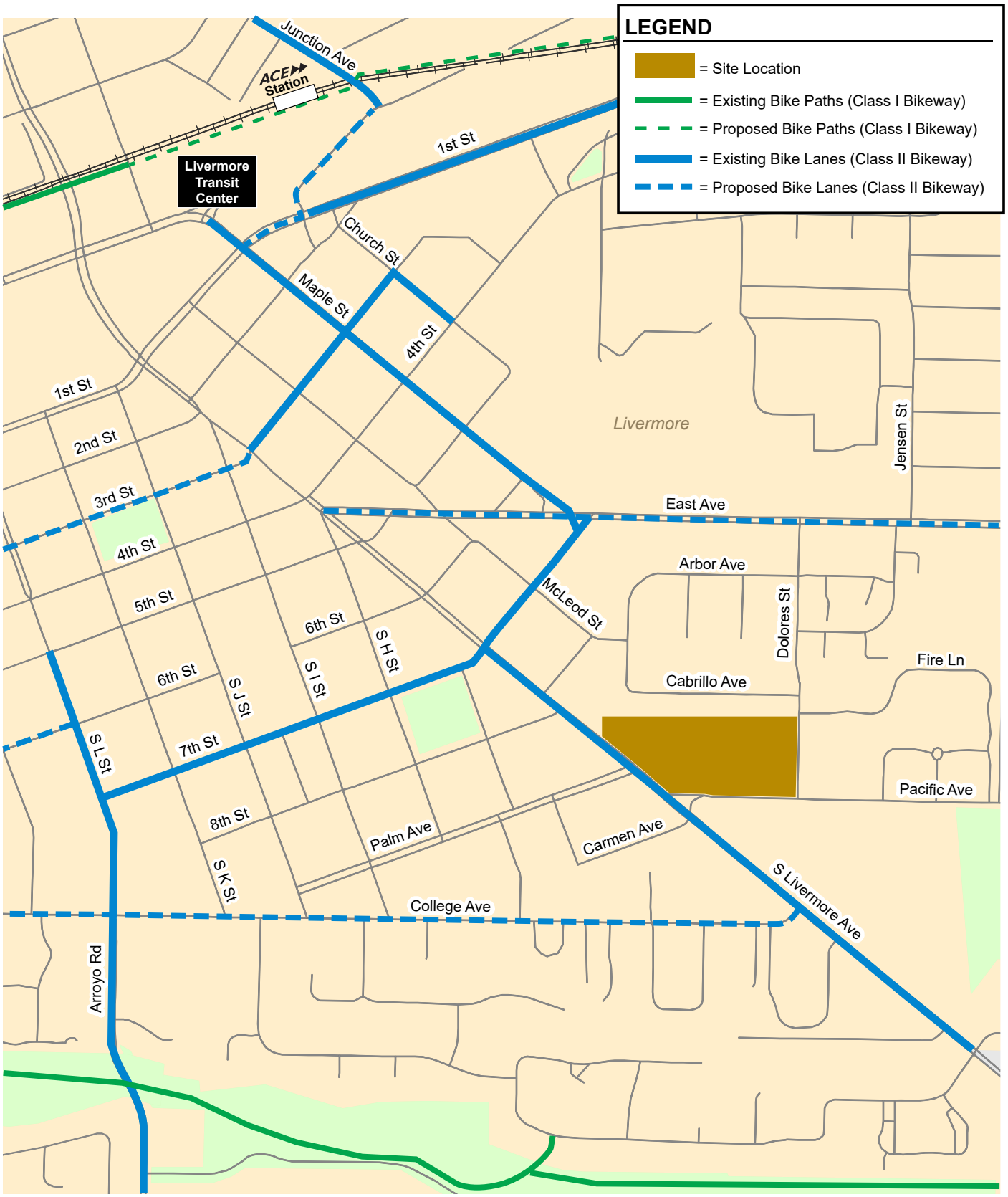


Figure 3
Existing Bicycle Facilities

NORTH
Not to Scale

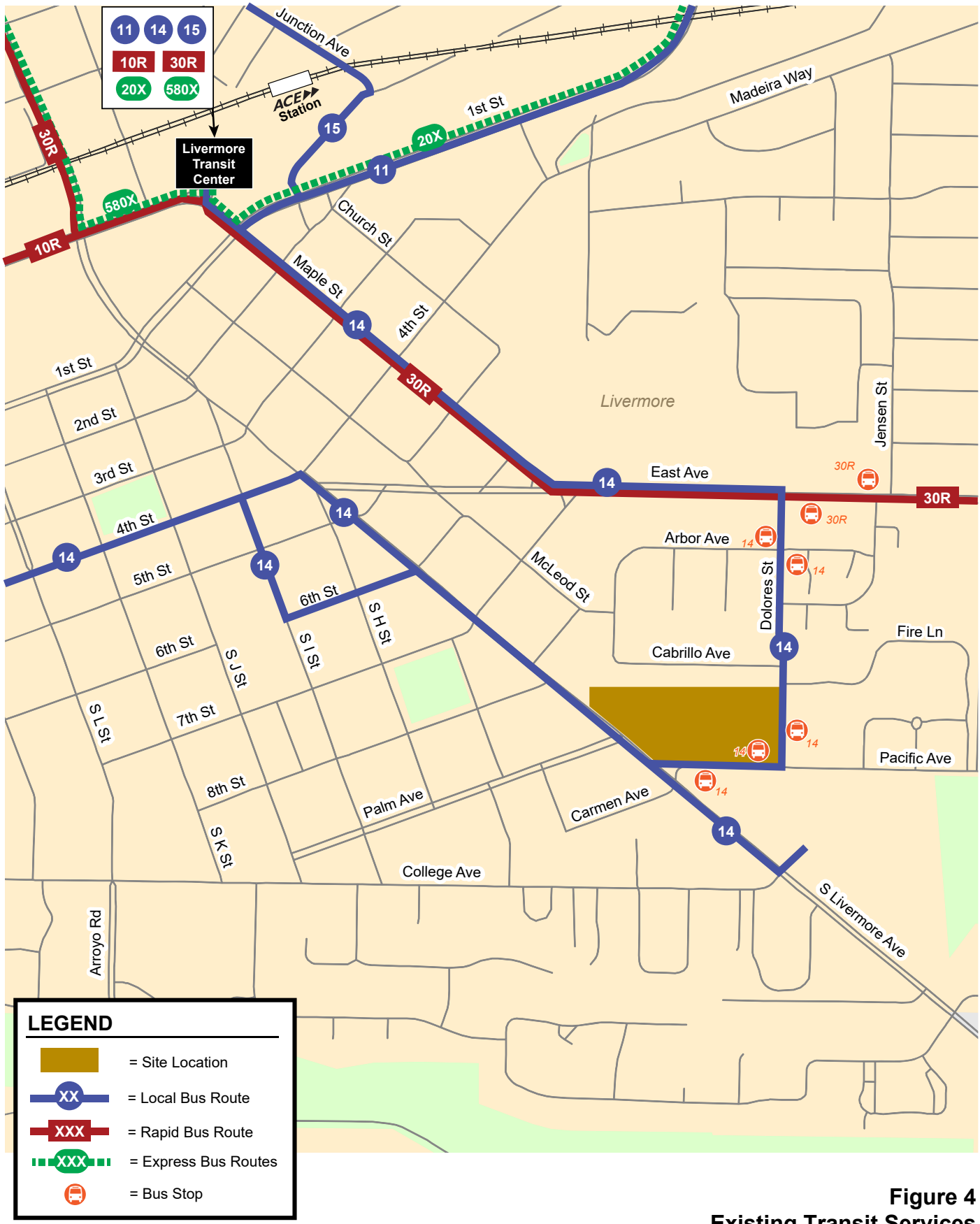


Figure 4
Existing Transit Services

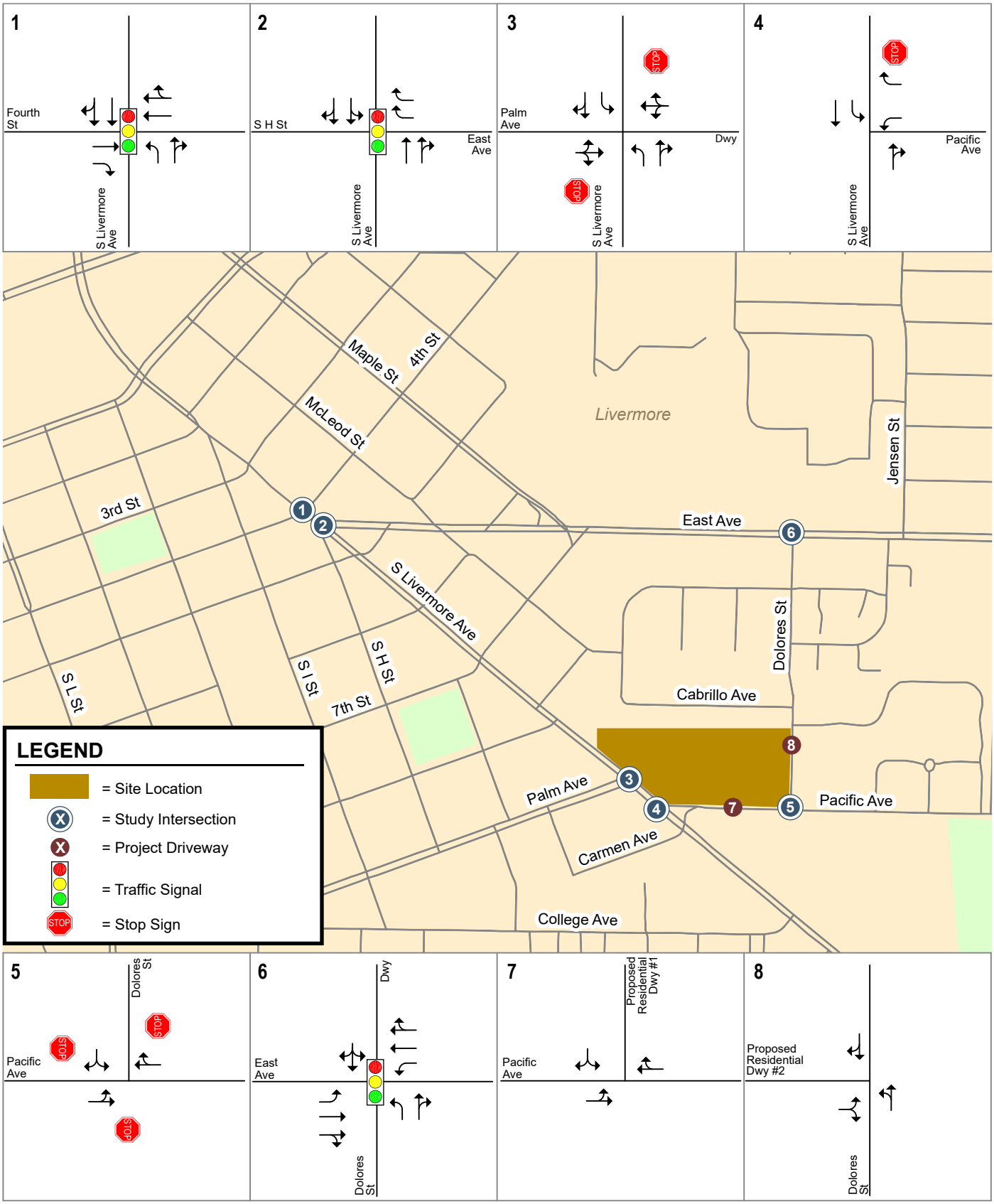


Figure 5
Existing Lane Configurations

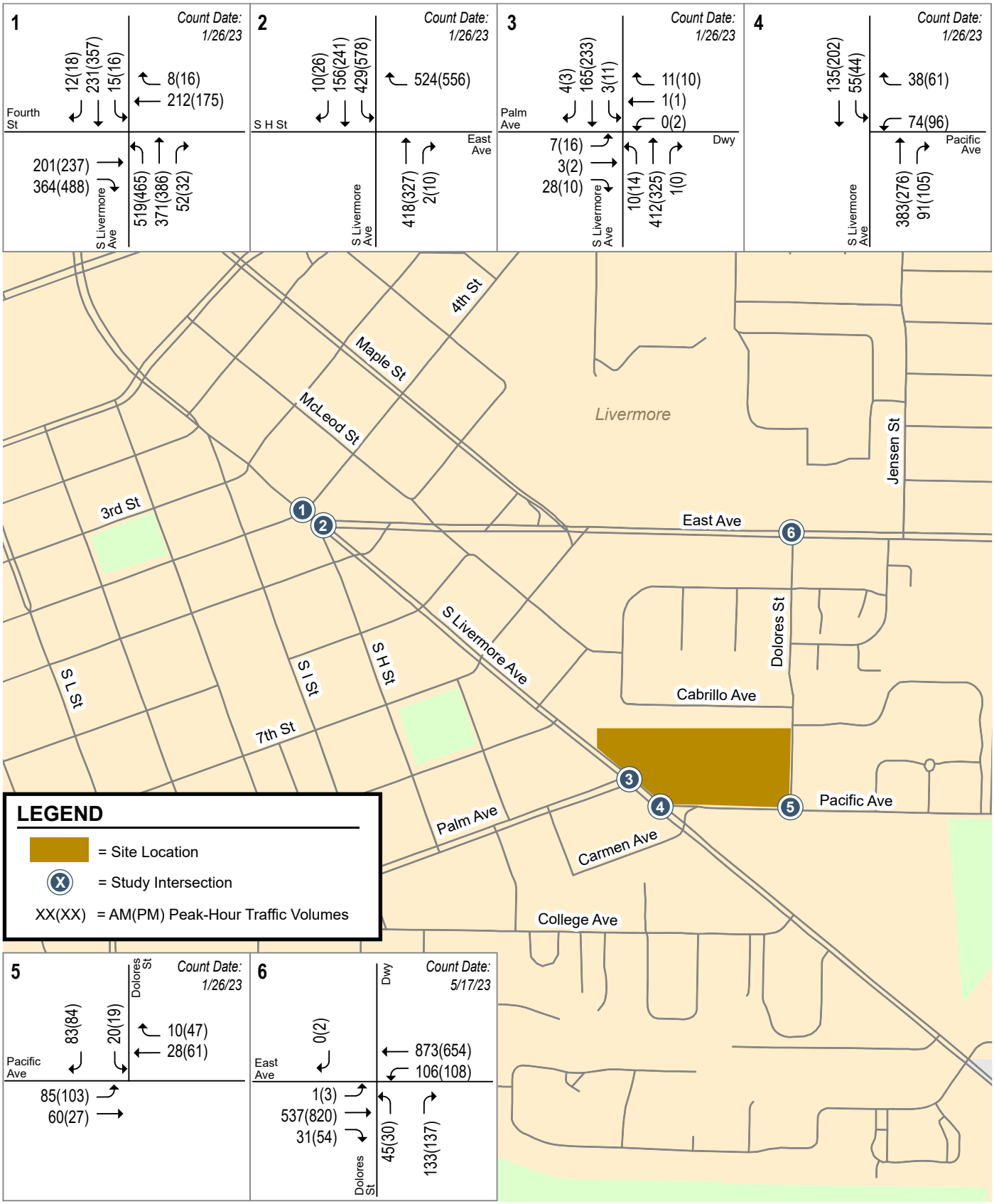


Figure 6
Existing Traffic Volumes

NORTH
Not to Scale

Existing Conditions Intersection Levels of Service

The results of the level of service analysis under existing conditions are summarized in Table 4. The results show that all six study intersections currently operate at an acceptable level of service during the AM and PM peak hours. The level of service calculation sheets are included in Appendix B.

Table 4
Existing Intersection Levels of Service

					Existing	
ID	Intersection	Control [1]	Peak Hour	Count Date	Avg. Delay[2]	LOS
1	S. Livermore Ave and Fourth St	Signal	AM	01/26/23	24.3	C
			PM	01/26/23	31.5	C
2	S. Livermore Ave and East Ave	Signal	AM	01/26/23	23.9	C
			PM	01/26/23	25.1	C
3	S. Livermore Ave and Palm Ave	TWSC	AM	01/26/23	11.3	B
			PM	01/26/23	13.8	B
4	S. Livermore Ave and Pacific Ave	OWSC	AM	01/26/23	15.5	C
			PM	01/26/23	14.8	B
5	Dolores St and Pacific Ave	AWSC	AM	01/26/23	8.3	A
			PM	01/26/23	8.4	A
6	Dolores St and East Ave	Signal	AM	05/17/23	21.0	B
			PM	05/17/23	13.2	B

Notes:
1. Control Type Definitions: OWSC = One-Way Stop Control, TWSC = Two-Way Stop Control, AWSC = All-Way Stop Control.

2. Delay/LOS based on HCM 7th methodology. Intersections (1 and 2) that were not supported by HCM 7th methodology, HCM 2000 was used. Intersection level of service for OWSC and TWSC intersections is represented by the delay for the worst approach. Intersection level of service for all other control types is represented by average delay for all movements.

Project Trip Estimates

The magnitude of traffic produced by a new development and the locations where that traffic would appear are estimated using a three-step process: 1) trip generation, 2) trip distribution, and 3) trip assignment. In determining project trip generation, the magnitude of traffic entering and exiting the project site is estimated for the AM and PM peak hours. As part of the project trip distribution, an estimate is made of the directions to and from which the project trips would travel. In the project trip assignment, the project trips are assigned to specific streets and intersections. These procedures are described below.

Trip Generation

Daily and peak hour trip generation estimates for the proposed project were based on trip rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition* (2021) for “Single-Family Attached Housing” (Land Use 215) located in a general Urban/Suburban area. Based on the ITE rates, the proposed project would generate 828 gross daily trips including 55 gross AM peak-hour trips and 66 gross PM peak-hour trips (see Table 5).

The project is eligible to receive credit for trips generated by the existing buildings on the site. The traffic generated by the existing shopping center was estimated based on AM and PM peak hour driveway counts conducted on Thursday, January 26, 2023. Based on the October 2022 rent roll provided by the applicant, the existing shopping plaza was more than 60% vacant. The daily trips for the shopping center were estimated by assuming five times the sum of AM and PM peak hour trips.

The number of trips generated by the existing shopping center was deducted from the number of trips that would be generated by the proposed project, which results in a net increase of 138 daily trips including 11 net trips during the AM peak hour and 28 fewer trips during the PM peak hour. The existing trip credits reflect more than 60% of the shopping center being vacant. Thus, compared to the trips that could be generated by the shopping center at full occupancy, the proposed residential development would generate fewer daily, AM and PM peak hour trips.

Table 5
Project Trip Generation Estimates

		Daily		AM Peak Hour				PM Peak Hour			
Land Use	**Size**	**Rate**	**Trips**	**Rate**	**In**	**Out**	**Total**	**Rate**	**In**	**Out**	**Total**
Proposed Uses											
Residential[1]	115 du	7.20	828	0.48	17	38	55	0.57	38	28	66
Gross Project Trips			**828**		**17**	**38**	**55**		**38**	**28**	**66**
Existing Uses											
Shopping Center[2]	66.6 ksf		*-690*		*-25*	*-19*	*-44*		*-51*	*-43*	*-94*
Total Net New Trips			**138**		**(8)**	**19**	**11**		**(13)**	**(15)**	**(28)**

Notes:

Trip rates are from the ITE Trip Generation Manual, 11th Edition, 2021.

[1] Single-Family Attached Housing (Land Use 215) average rates in a general urban/suburban setting expressed in trips per dwelling unit (du) are used.

[2] Based on AM and PM peak hour driveway counts conducted on Thursday, January 26, 2023. Daily volume is calculated assuming 5 x (AM peak hour plus PM peak hour volumes).

Trip Distribution and Assignment

The trip distribution patterns were estimated in discussion with City staff based on existing travel patterns on the surrounding roadway system and locations of complimentary land uses. The project trip distribution patterns are shown on Figure 7.

The estimated project generated traffic was added to the surrounding road network based on the distribution percentages shown on Figure 7. The project trip assignment is shown on Figure 8. The existing trip credit is shown on Figure 9.

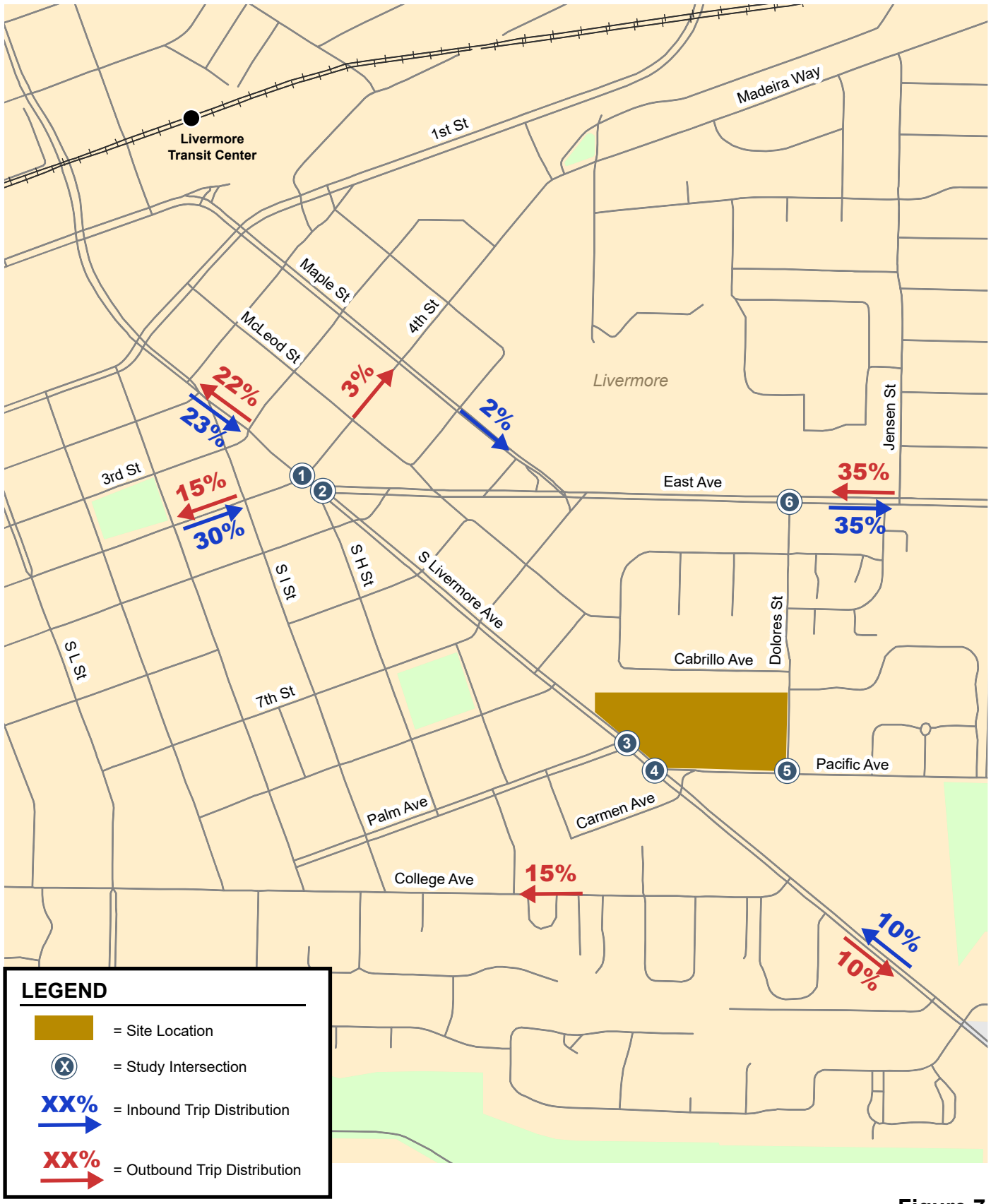


Figure 7
Project Trip Distribution

NORTH
Not to Scale

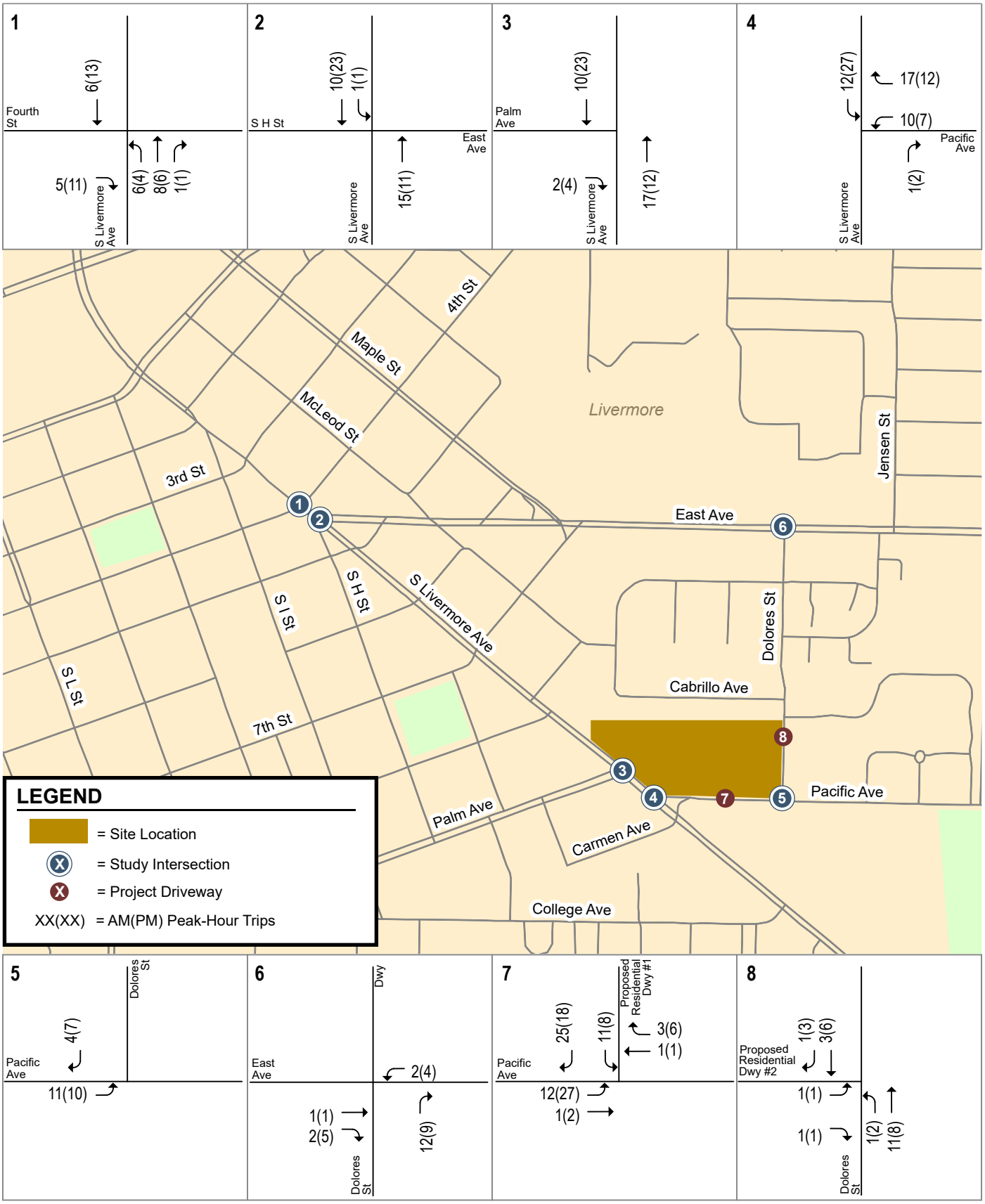


Figure 8
Gross Project Trip Assignment

NORTH
Not to Scale

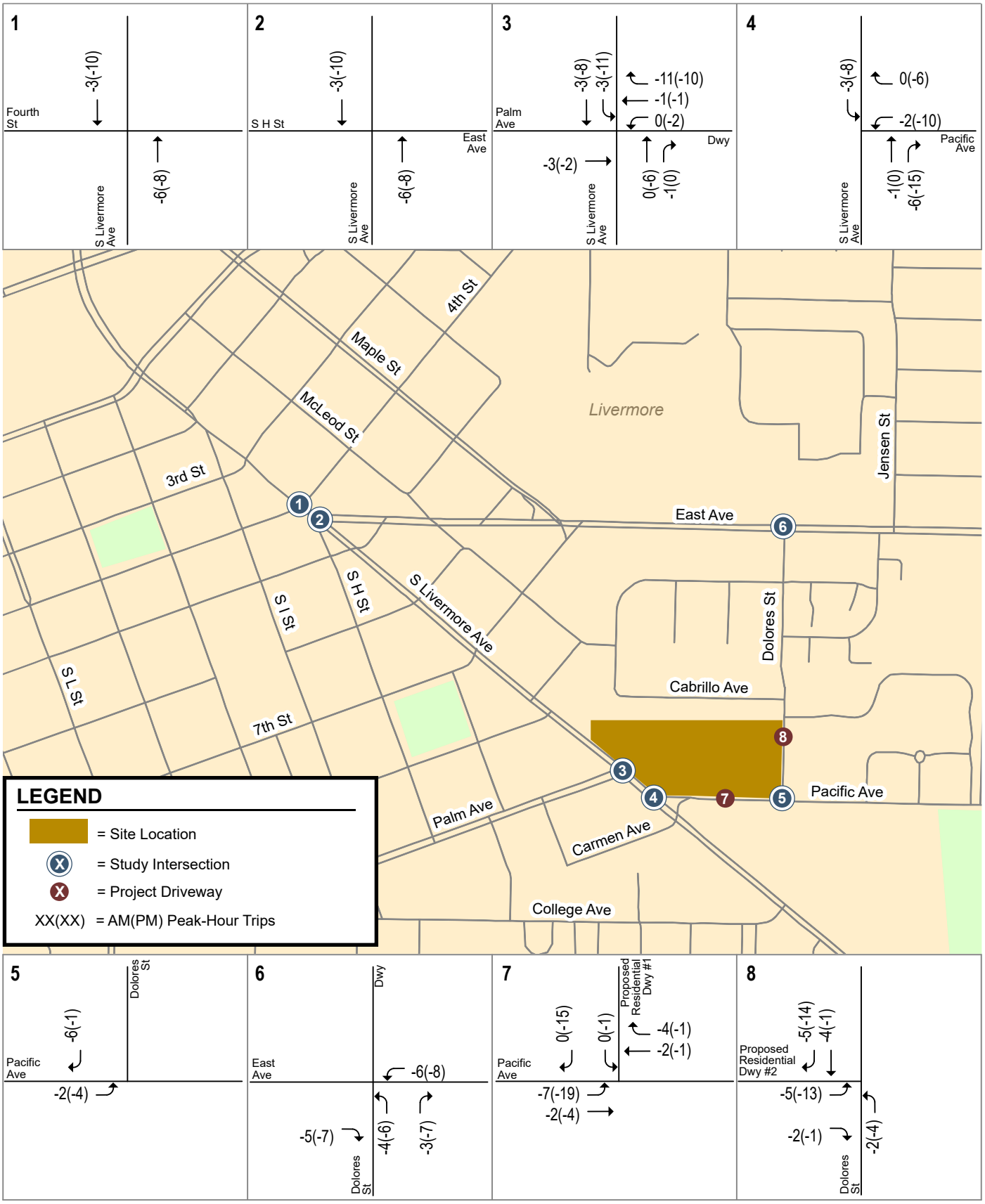


Figure 9
Existing Trip Credit

NORTH
Not to Scale

Roadway Network

The roadway network under background, cumulative, and project conditions would be the same as existing conditions because there are no planned and funded transportation improvements at the study intersections that would alter the existing intersection lane configurations, and the project would not alter the existing intersection lane configurations.

Traffic Volumes

Background Traffic Volumes

Background conditions are defined as conditions just prior to completion of the proposed development. Based on coordination with Livermore City staff, there are no approved projects in the study area. Therefore, annual growth rates of 1.6% for the AM peak hour and 1.38% for the PM peak hour were derived based on volume growth for roadways around the project site in the Alameda County Travel Demand Model. The growth rates were applied to the existing 2023 AM and PM peak hour volumes for a period of three years to estimate the background volumes. The annual growth factors account for general growth in the area. The background volumes are shown on Figure 10.

Background Plus Project Traffic Volumes

Project trips, as represented in the above project trip assignment, were added to background traffic volumes to obtain background plus project traffic volumes (see Figure 11).

Cumulative 2045 Traffic Volumes

Similar to the background traffic volumes, the cumulative no project traffic volumes were estimated by applying a 1.6 and 1.38 percent growth factor per year for 22 years to existing traffic volumes during the AM and PM peak hours, respectively. The cumulative traffic volumes are shown on Figure 12.

Cumulative 2045 Plus Project Traffic Volumes

Project trips, as represented in the above project trip assignment, were added to cumulative traffic volumes to obtain cumulative plus project traffic volumes (see Figure 13).

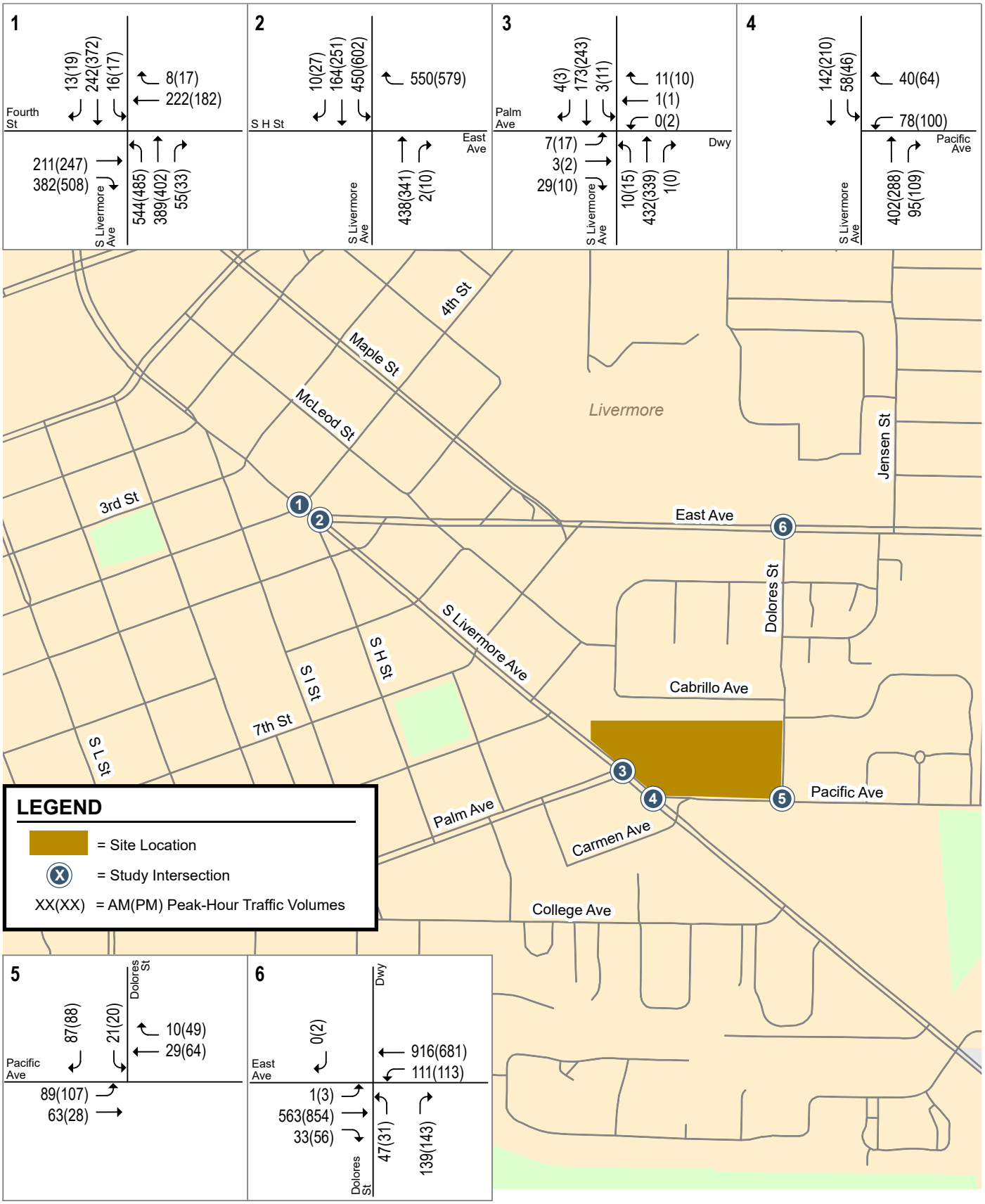
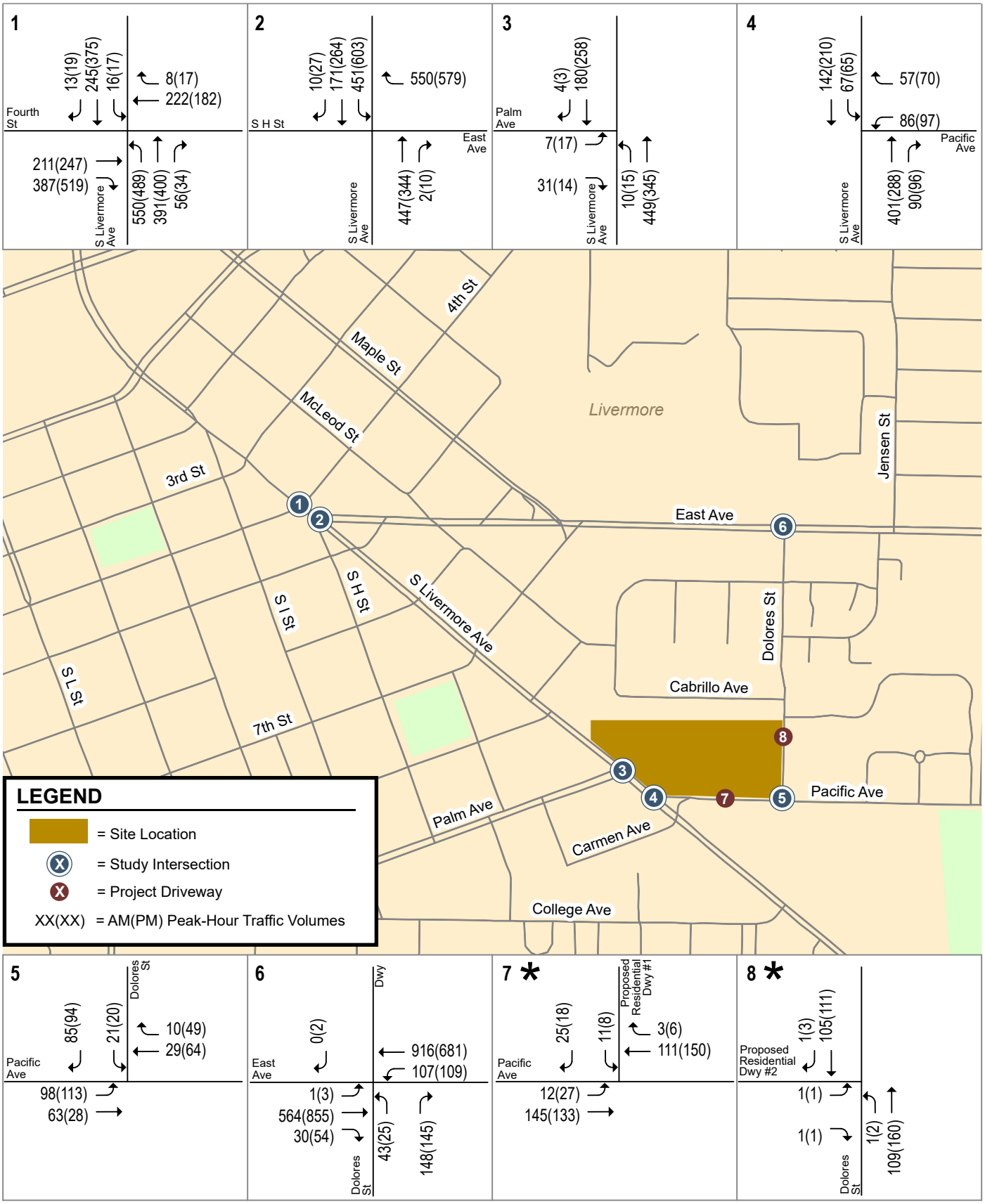


Figure 10
Background Traffic Volumes

NORTH
Not to Scale



* = Gross Project Trips are shown at project driveways.

Figure 11
Background Plus Project Traffic Volumes

NORTH
Not to Scale

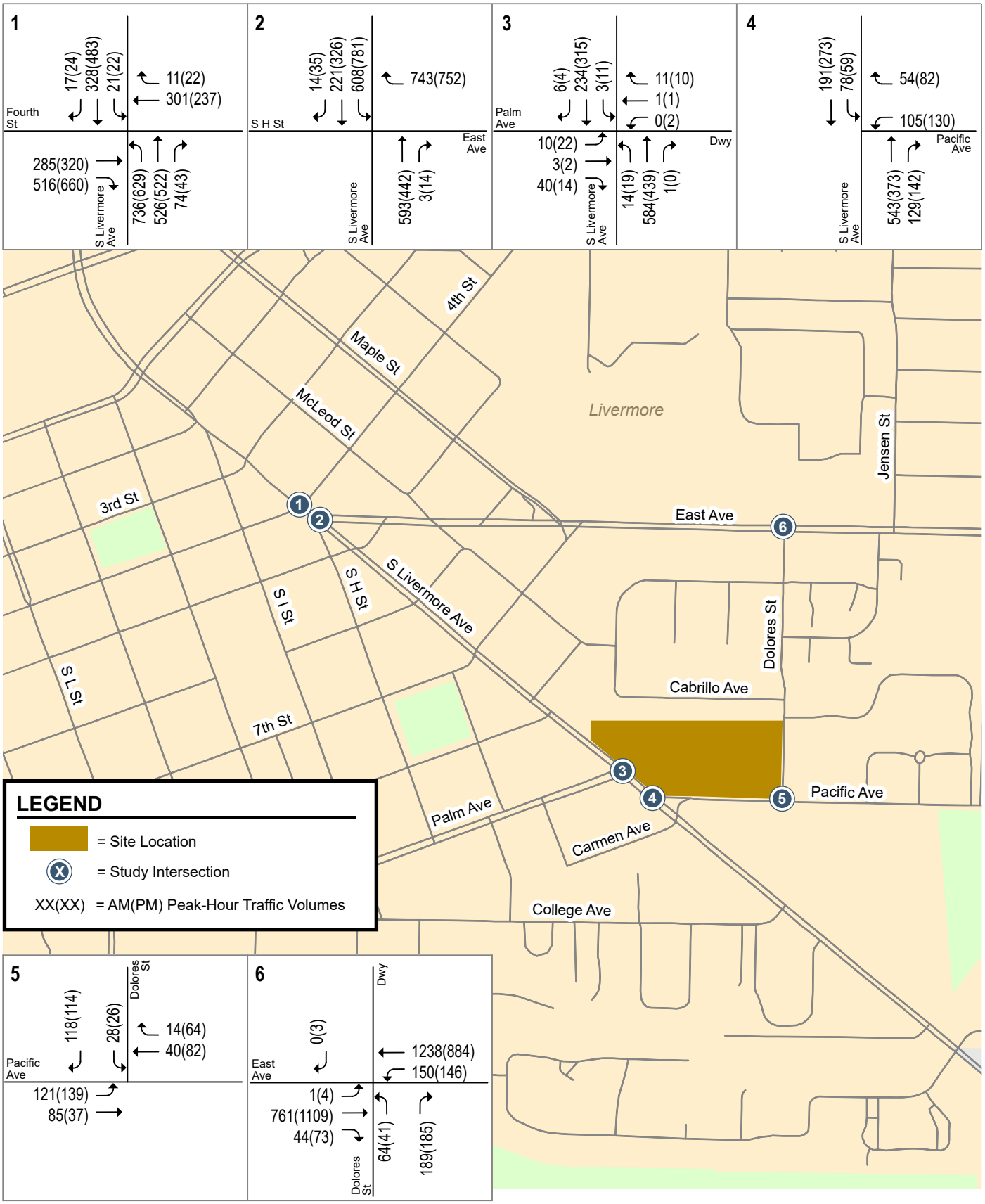
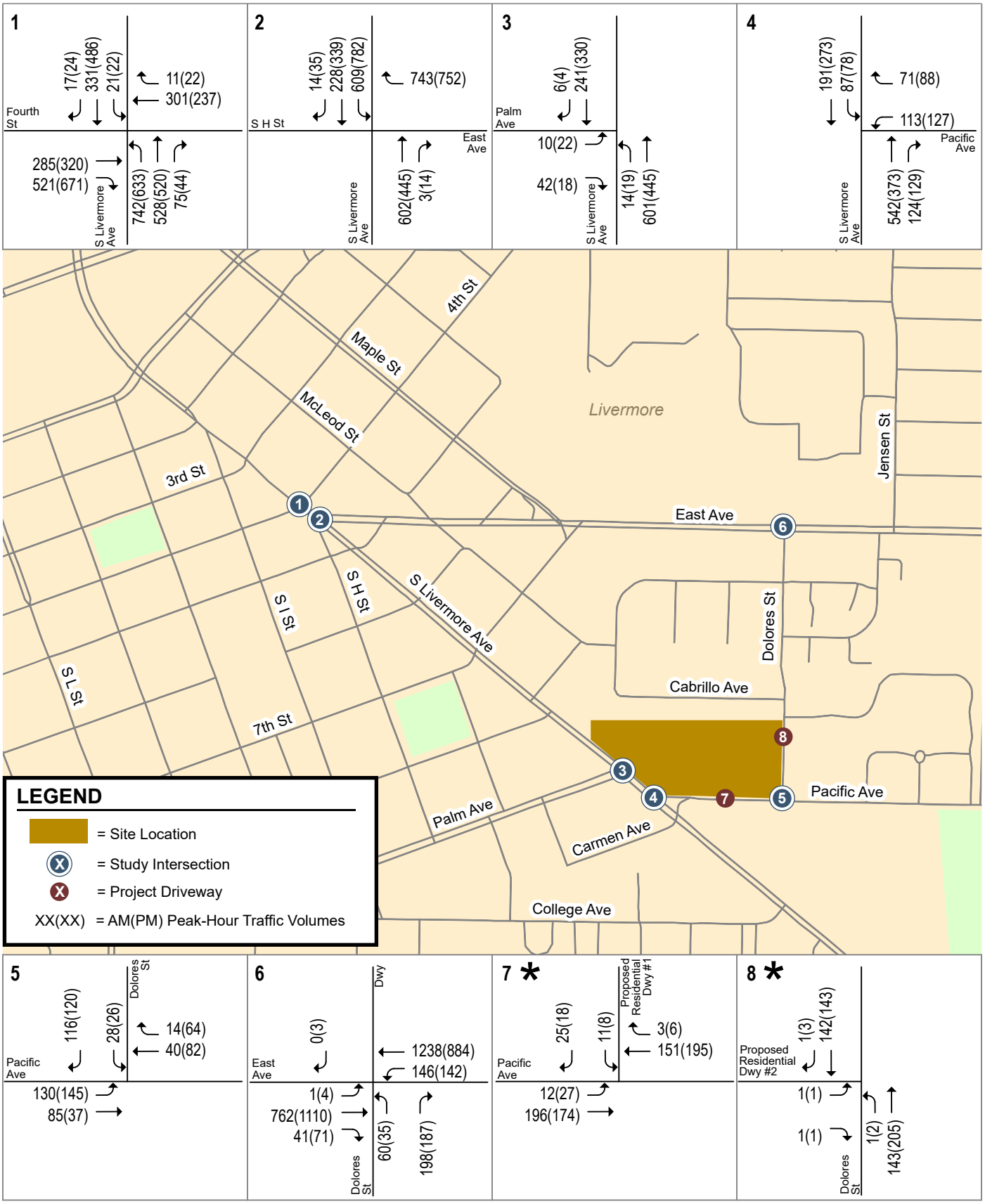


Figure 12
Cumulative 2045 Traffic Volumes

NORTH
Not to Scale



* = Gross Project Trips are shown at project driveways.

Figure 13
Cumulative 2045 Plus Project Traffic Volumes

NORTH
Not to Scale

Intersection Levels of Service

The results of the intersection level of service analysis (see Tables 6 and 7) show that all study intersections, would operate at acceptable levels during both the AM and PM peak hours of traffic under background and cumulative conditions, with and without the project. The level of service calculation sheets are included in Appendix B.

There is one signalized intersection (#6) for which the average delay under project conditions is shown to be less than under no project conditions during at least one peak hour. This is because the intersection delay is a weighted average of all intersection movements and the addition of project traffic to movements with delays lower than the average intersection delay can reduce the average delay for the entire intersection. Also, the project would generate fewer trips during the PM peak hour, compared to the existing shopping center at its current occupancy. The intersection of S. Livermore Avenue/Palm Avenue would operate as a three-legged intersection, as the existing driveway opposite Palm Avenue would be removed with the redevelopment of the project site.

Table 6
Background Intersection Levels of Service

					Background		Background Plus Project		
ID	Intersection	Control [1]	Peak Hour	Count Date	Avg. Delay[2]	LOS	Avg. Delay[2]	LOS	Incr. in delay
1	S. Livermore Ave and Fourth St	Signal	AM	01/26/23	24.9	C	24.9	C	0.000
			PM	01/26/23	31.9	C	31.9	C	0.000
2	S. Livermore Ave and East Ave	Signal	AM	01/26/23	24.7	C	24.7	C	0.000
			PM	01/26/23	26.0	C	26.0	C	0.000
3	S. Livermore Ave and Palm Ave	TWSC	AM	01/26/23	11.2	B	10.8	B	-0.430
			PM	01/26/23	14.3	B	13.5	B	-0.830
4	S. Livermore Ave and Pacific Ave	OWSC	AM	01/26/23	16.3	C	16.7	C	0.310
			PM	01/26/23	15.4	C	15.8	C	0.420
5	Dolores St and Pacific Ave	AWSC	AM	01/26/23	8.4	A	8.5	A	0.100
			PM	01/26/23	8.5	A	8.5	A	0.000
6	Dolores St and East Ave	Signal	AM	05/17/23	22.6	B	21.3	B	-1.300
			PM	05/17/23	13.7	B	13.6	B	-0.100
7	Project Dwy and Pacific Ave	OWSC	AM	01/26/23	--	--	9.5	A	--
			PM	01/26/23	--	--	9.8	A	--
8	Dolores St and Project Dwy	OWSC	AM	01/26/23	--	--	9.3	A	--
			PM	01/26/23	--	--	9.6	A	--

Notes:

1. Control Type Definitions: OWSC = One-Way Stop Control, TWSC = Two-Way Stop Control, AWSC = All-Way Stop Control.

2. Delay/LOS based on HCM 7th methodology. Intersections (1 and 2) that were not supported by HCM 7th methodology, HCM 2000 was used. Intersection level of service for OWSC and TWSC intersections is represented by the delay for the worst approach. Intersection level of service for all other control types is represented by average delay for all movements.

Table 7
Cumulative 2045 Intersection Levels of Service

ID	Intersection	Control [1]	Peak Hour	Count Date	Cumulative Avg. Delay[2]	Cumulative LOS	Cumulative Plus Project Avg. Delay[2]	Cumulative Plus Project LOS	Incr. in delay
1	S. Livermore Ave and Fourth St	Signal	AM	01/26/23	32.4	C	32.5	C	0.100
			PM	01/26/23	42.0	D	42.7	D	0.700
2	S. Livermore Ave and East Ave	Signal	AM	01/26/23	36.0	D	36.3	D	0.300
			PM	01/26/23	35.6	D	35.6	D	0.000
3	S. Livermore Ave and Palm Ave	TWSC	AM	01/26/23	13.3	B	12.5	B	-0.840
			PM	01/26/23	17.8	C	16.6	C	-1.150
4	S. Livermore Ave and Pacific Ave	OWSC	AM	01/26/23	27.8	D	29.6	D	1.800
			PM	01/26/23	23.2	D	24.5	D	1.300
5	Dolores St and Pacific Ave	AWSC	AM	01/26/23	9.1	A	9.3	A	0.200
			PM	01/26/23	9.1	A	9.2	A	0.100
6	Dolores St and East Ave	Signal	AM	05/17/23	25.3	B	24.6	B	-0.700
			PM	05/17/23	19.8	B	19.4	B	-0.400
7	Project Dwy and Pacific Ave	OWSC	AM	01/26/23	--	--	9.9	B	--
			PM	01/26/23	--	--	10.3	B	--
8	Dolores St and Project Dwy	OWSC	AM	01/26/23	--	--	9.7	A	--
			PM	01/26/23	--	--	10.0	B	--

Notes:

1. Control Type Definitions: OWSC = One-Way Stop Control, TWSC = Two-Way Stop Control, AWSC = All-Way Stop Control.

2. Delay/LOS based on HCM 7th methodology. Intersections (1 and 2) that were not supported by HCM 7th methodology, HCM 2000 was used. Intersection level of service for OWSC and TWSC intersections is represented by the delay for the worst approach. Intersection level of service for all other control types is represented by average delay for all movements.

Roadway Segment Analysis

An analysis of the potential daily traffic increase due to the proposed project was performed to identify the effect of the addition of project traffic on the volume-to-capacity ratio of select street segments. The City of Livermore *General Plan* identifies Livermore Avenue as a Major Street, which typically carries 20,000 to 50,000 vehicles per day. However, S. Livermore Avenue has approximately 6,000 vehicles per day, which classifies as a Collector. Pacific Avenue is considered a Local Street, which typically carries up to 5,000 vehicles per day. The analysis focused on the daily traffic volumes of the following two key segments along Pacific Avenue and S. Livermore Avenue:

- Pacific Avenue, between S. Livermore Avenue and Dolores Street
- S. Livermore Avenue, between Palm Avenue and 8th Street

Roadway segment levels of service were calculated by comparing the daily roadway volumes to the LOS thresholds used for other projects in Livermore and other communities within Alameda County. For major streets a per-lane capacity of 800 vehicles per hour and 10,000 vehicles per day was used. And for local streets, 400 vehicles per hour and 10,000 vehicles per day was used. The City of Livermore does not have a level of service policy for daily roadway segment operations.

Existing daily traffic counts on these roadway segments were collected over a one-day time period in January 2023 (see Appendix A). Background and cumulative daily traffic volumes without the proposed project were estimated using an annual growth rate of 1.5% based on volume growth for roadways around the project site in the County's travel demand forecast model (see Table 8). The analysis shows that both roadway segments would continue to operate at LOS A under project and cumulative plus project conditions.

Evaluation of Vehicle Queuing

Vehicle queuing was evaluated using Synchro software for selected locations where the project would add 10 or more left-turning vehicles. The basis of the analysis is as follows: (1) Synchro is used to estimate the 95th percentile maximum number of queued vehicles for a particular movement; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available storage capacity for the movement to determine if adequate storage is available to accommodate the 95th percentile queues. This analysis thus provides a basis for determining whether the addition of project trips would exacerbate peak hour queues and delays, as well as estimating future storage requirements at intersections.

Based on the selection criteria of 10 or more project trips per left-turn lane, the following lanes were analyzed during the AM and PM peak hours:

- S. Livermore Avenue and Pacific Avenue – southbound S. Livermore Avenue left-turn onto eastbound Pacific Avenue
- S. Livermore Avenue and Pacific Avenue – westbound Pacific Avenue left-turn onto southbound S. Livermore Avenue

The results of the queuing analysis show that the project would not cause extensive queuing issues. The vehicle queuing estimates are provided in Table 9.

Table 8
Roadway Segment Analysis

Roadway Segment	Existing					Background			Background Plus Project			Cumulative			Cumulative Plus Project		
	ADT	# of Lanes	Daily Capacity	V/C Ratio	LOS	ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS
Pacific Ave between S. Livermore Ave and Dolores St	3,157	2	10,000	0.3157	A	3,301	0.1651	A	3,381	0.1691	A	4,381	0.21903	A	4,461	0.2230	A
S. Livermore Ave between Palm Ave and 8th St	6,424	2	20,000	0.3212	A	6,717	0.3359	A	6,777	0.3389	A	8,914	0.4457	A	8,974	0.4487	A

Table 9
Queuing Analysis Summary

Analysis Scenario	S. Livermore Ave & Pacific Ave			
	SBL		WBL[1]	
	AM	PM	AM	PM
Existing				
Volume (vphpl)	55	44	74	96
95th %. Queue (ft/ln)	5	3	21	26
95th %. Queue[2] (veh/ln)	1	1	1	1
Storage (ft/ln)	100	100	175	175
Adequate (Y/N)	Y	Y	Y	Y
Background				
Volume (vphpl)	58	46	78	100
95th %. Queue (ft/ln)	5	4	24	29
95th %. Queue[2] (veh/ln)	1	1	1	1
Storage (ft./ ln.)	100	100	175	175
Adequate (Y/N)	Y	Y	Y	Y
Background Plus Project				
Volume (vphpl)	65	69	87	96
95th %. Queue (ft/ln)	6	6	29	30
95th %. Queue[2] (veh/ln)	1	1	1	1
Storage (ft/ln)	100	100	150	150
Adequate (Y/N)	Y	Y	Y	Y
Cumulative				
Volume (vphpl)	78	59	105	130
95th %. Queue (ft/ln)	8	5	62	65
95th %. Queue[2] (veh/ln)	1	1	3	3
Storage (ft/ln)	100	100	175	175
Adequate (Y/N)	Y	Y	Y	Y
Cumulative Plus Project				
Volume (vphpl)	85	82	114	126
95th %. Queue (ft/ln)	9	8	78	72
95th %. Queue[2] (veh/ln)	1	1	4	3
Storage (ft/ln)	100	100	150	150
Adequate (Y/N)	Y	Y	Y	Y

Notes:
SBL = southbound left-turn
[1] The existing, background, and cumulative storage lengths are measured from the intersection to the first existing driveway. Under project conditions, the storage lengths are measured from the intersection to the proposed driveway.
[2] Assumes 25 feet per vehicle queued.

4. Other Transportation Issues

This chapter presents other transportation issues associated with the proposed project. These include an analysis of:

- Site access and on-site circulation
- Parking
- Potential adverse effects to transit, bicycle, and pedestrian facilities

Unlike the level of service and VMT impact methodology, which is adopted by the City Council, the analyses in this chapter are based on professional judgment in accordance with the standards and methods employed by the traffic engineering community.

Site Access and On-Site Circulation

The site access and on-site circulation evaluation is based on the July 21, 2023 site plan prepared by Swenson (see Figure 2). Site access was evaluated to determine the adequacy of the site's driveways with regard to the following: traffic volume, delays, sight distance, vehicle queues, geometric design, and safety. On-site vehicular circulation was reviewed in accordance with generally accepted traffic engineering standards and transportation planning principles.

Vehicle Site Access

Vehicular access to the site would be provided via one full-access driveway on Pacific Avenue and one full-access driveway on Dolores Street. Parking would be provided within individual garages and surface level guest parking spaces. As shown on the site plan, the driveway on Pacific Avenue would be a total of 62 feet in width, including an 8-foot median between a 27-foot inbound lane and a 27-foot outbound lane. The driveway on Dolores Street would be approximately 26 feet in width. The driveway widths would meet the City's minimum requirement of 24 feet for a two-way driveway and will be able to accommodate vehicle turns to and from the site.

Project Driveway Operations

The project is estimated to generate 17 gross inbound trips and 38 gross outbound trips during the AM peak hour and 38 gross inbound trips and 28 gross outbound trips during the PM peak hour between the two driveways on Pacific Avenue and Dolores Street. Thus, one vehicle would enter either driveway approximately every 4 minutes and one vehicle would exit either driveway approximately every 90 seconds during the AM peak hour. During the PM peak hour, one vehicle would enter either driveway approximately every 90 seconds and one vehicle would exit either driveway approximately every two minutes.

Because of the low/moderate project trips at the driveways and low/moderate volumes on Dolores Street and Pacific Avenue, vehicles would easily be able to enter and exit the project driveways. Vehicles turning left into the project site on Dolores Street or Pacific Avenue could block the travel lane momentarily due to vehicles slowing down to turn into the driveway or yielding to oncoming traffic. This would not have a noticeable effect on traffic operations.

Sight Distance

The project driveways should be free and clear of any obstructions to optimize sight distance, thereby ensuring that exiting vehicles can see pedestrians on the sidewalk and other vehicles traveling on Pacific Avenue and Dolores Street. Based on City of Livermore Standard Detail L-17A, trees should be placed a minimum of 40 feet from the face-of-curb. Other landscaping and signage should not conflict with a driver's ability to locate a gap in traffic and see oncoming pedestrians and bicyclists. Adequate sight distance (sight distance triangles) should be provided at the driveways in accordance with Caltrans standards. Sight distance triangles should be measured approximately 10 feet back from the traveled way.

According to the Caltrans *Highway Design Manual*, the minimum stopping sight distance is the distance required by the user, traveling at a given speed, to bring the vehicle to a stop after an object 0.5-foot high on the road becomes visible. Stopping sight distance for motorists is measured from the driver's eyes, which are assumed to be 3.5 feet above the pavement surface, to an object 0.5 foot high on the road. The required stopping sight distances are based on the Caltrans *Highway Design Manual*, Table 201.1. The project driveways are located on Pacific Avenue and Dolores Street, which have an implied speed limit of 25 mph. Thus, the Caltrans stopping sight distance requirement is 150 feet on Pacific Avenue and Dolores Street.

The project driveway on Pacific Avenue would replace an existing driveway approximately 215 feet east of the S. Livermore/Pacific Avenue intersection (from the curb on the west side of the driveway to the nearest painted crosswalk line). Vehicles turning onto eastbound Pacific Avenue from S. Livermore Avenue are assumed to have a turning speed of 15 mph, which corresponds to a Caltrans stopping sight distance of 100 feet. There is a roadway curve to the west of the driveway, but vehicles at the driveway would be able to see vehicles 125 feet west on eastbound Pacific Avenue after they turn from S. Livermore Avenue. On-street parking is currently permitted for 45 feet west of the existing driveway and there is currently 25 feet of red curb to the east of the existing driveway.

Section 3B.19 of California Manual on Uniform Traffic Control Devices (CA MUTCD) states that "*At all intersections, one stall length on each side measured from the crosswalk or end of curb return should have parking prohibited.*" In order to prevent vehicles from parking and obstructing the vision of exiting drivers, Hexagon recommends including 25 feet of red curb to the west and 25 feet of red curb to the east of the project driveway on Pacific Avenue.

The project driveway on Dolores Street would replace an existing driveway. There are no roadway curves and on-street parking is permitted on both sides of the driveway. In order to prevent vehicles from parking and obstructing the vision of exiting drivers, Hexagon recommends including 25 feet of red curb to the north and south of the project driveway on Dolores Street.

> **Recommendation:** Hexagon recommends installing a minimum of 25 feet of red curb to the east and west of the driveway on Pacific Avenue and 25 feet of red curb to the north and south of the driveway on Dolores Street.

On-Site Circulation

On-site vehicular circulation was reviewed in accordance with the City of Livermore Development Code and generally accepted traffic engineering standards. Generally, the proposed site plan would provide vehicle traffic with adequate connectivity through the parking areas. The project would provide 90-

degree parking stalls throughout the parking areas, with some parallel parking spaces along the northern edge of the project site. Based on the Livermore Development Code Section 4.04.070, drive aisles with 90-degree parking spaces are required to be 24 feet wide. As measured on the site plan, the drive aisles would range between 24 and 26 feet wide, which would meet the requirement.

The site plan provides adequate pedestrian circulation throughout the sites and the surrounding pedestrian facilities. In addition to the sidewalks along S. Livermore Avenue, Pacific Avenue, and Dolores Street, the site plan shows continuous walkways within the site that would provide pedestrian access between the street frontages and all proposed buildings and shared outdoor spaces.

On-site vehicle circulation was also evaluated to identify whether there would be dead-end aisles on site. Dead-end aisles are undesirable because drivers can enter the aisle, and upon discovering that there is no available parking, must back out or conduct three-point turns. The residential parking area would have a dead-end aisle near the guest parking spaces in the southeast corner of the project site.

> **Recommendation:** Hexagon recommends including a turnaround space for residential guests at the end of the aisle in the southeast corner of the project site.

Emergency Vehicles, Truck Access and Circulation

Emergency response vehicles would be able to access the project site via the driveways on Pacific Avenue, and Dolores Street. Additionally, one EVA driveway is proposed on S. Livermore Avenue and two EVA driveways are proposed on Dolores Street.

Parking Analysis

The parking analysis for the proposed project is based on the City of Livermore's zoning code requirements.

Vehicle Parking

Section 4.04.020 of the Livermore Development Code states that townhouse/condominium projects are required to provide two spaces for each dwelling unit and one guest parking space per four dwelling units. Based on the proposed 115 townhouse units, the project would be required to provide 230 residential parking spaces and 29 guest parking spaces. The project proposes 230 residential parking spaces and 38 guest parking spaces (including 8 compact parking stalls and 3 ADA compliant stalls), which would exceed the requirement.

Based on the Livermore Development Code Section 4.04.070, all standard perpendicular parking spaces should be a minimum of 18 feet long by 9 feet wide and all compact spaces should be a minimum of 16 feet long by 8.5 feet wide. However, the paved parking space length may be decreased by up to two feet by providing an equivalent vehicle overhang into landscaped areas, or over paved walkways.

> **Recommendation:** Prior to final design, parking stall dimensions should be reviewed by City staff.

ADA Parking

The 2019 California Building Code Table 11B-208.2 states that parking facilities that would provide 26 to 50 parking spaces are required to provide two accessible parking spaces. The project should provide two ADA spaces within the guest parking spaces. Based on Section 11B-208.2.4, the project would be required to provide one van accessible space. The site plan shows 3ADA stalls with all of them being van accessible.

Based on the 2019 California Building Code Section 11B-502.2, car accessible parking spaces should be a minimum of 9 feet wide and 18 feet long and van accessible parking spaces should be a minimum of 12 feet wide and 18 feet long. Van parking spaces may be 9 feet wide where access aisles are at least 8 feet wide.

Bicycle Parking

The Livermore Development Code Section 4.04.030 states that residential projects should provide a minimum of one secure bicycle stall per four bedrooms. Based on the proposed 443 bedrooms, the project would be required to provide 111 bicycle parking spaces for the residents. The site plan shows that a total of 115 bicycle parking spaces would be provided by providing one secured bicycle parking space within individual garages. The site plan also shows that the project would provide a total of 22 short-term bicycle parking spaces for residential guests at various locations on the project site.

Potential Adverse Effects on Pedestrians, Bicycles, and Transit

Pedestrians and Bicycles

The proposed project would generate pedestrian trips from residents and resident guests who work within walking distance of the site or who are traveling to/from transit stops (see further discussion below). Overall, the volume of pedestrian trips generated by the project is expected to be relatively low and not exceed the carrying capacity of the sidewalks and crosswalks nearby. Existing pedestrian counts on South Livermore Avenue, Pacific Avenue, and Dolores Street show low pedestrian activity in the area (a total of 25 pedestrian trips during the AM peak hour and 43 pedestrian trips during the PM peak hour for all three intersections combined). In the project vicinity, sidewalks are provided on both sides of adjacent streets, and crosswalks are provided at most of the study intersections. At least one leg of crosswalks is missing along the intersections of S. Livermore Avenue/East Avenue, Livermore Avenue/Pacific Avenue, Dolores Avenue/Pacific Avenue, and Dolores Avenue/East Avenue. However, the project is well situated to take advantage of the existing pedestrian facilities in the immediate vicinity. The existing networks of sidewalks and crosswalks provide good connectivity and safe routes to transit services and other points of interest in the downtown area. The proposed project would provide pedestrian access paths and crosswalks throughout the site connecting all adjacent streets to the buildings and parks on site.

Existing bicycle access to the project vicinity is provided primarily via a network of nearby Class II bike lanes. Bike lanes near the project site are located on South Livermore Avenue and 7th Street. Overall, the volume of bicycle trips generated by the project is expected to be relatively low and not exceed the bicycle-carrying capacity of streets surrounding the site. Existing bicycle counts on South Livermore Avenue, Pacific Avenue, and Dolores Street show low bicycle activity in the area (a total of 5 bicycle trips during the AM peak hour and 12 bicycle trips during the PM peak hour for all three intersections combined. The project would provide bicycle parking facilities on site to meet the requirements of the Livermore Municipal Code. The project would not remove any bicycle facilities, nor would it conflict with any adopted plans or policies for new bicycle facilities.

According to the 2019 Alameda County Congestion Management Program (CMP) Transportation Impact Analysis Technical Guidelines, a project would create an adverse effect on pedestrian and bike circulation if: (1) its vehicle trips would present a barrier to bikes/pedestrians safely crossing roadways, or (2) it would reduce or sever existing or planned bike/pedestrian circulation in the area. Based on these criteria, the proposed project would not create an adverse effect to bike/pedestrian circulation in the area.

Transit

Transit service to the project vicinity is provided by the Livermore-Amador Valley Transit Authority (LAVTA) Local Route 14 and Rapid Route 30R. Local Route 14 provides service between the East Dublin/Pleasanton BART station and the Livermore Transit Center, with bus stops located along Pacific Avenue and Dolores Street. Rapid Route 30R provides service between the Dublin BART station and the Livermore Transit Center, with bus stops located along East Avenue (see Chapter 2 for detailed discussion). According to the U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, public transportation trips comprise approximately 3.1% of the total commute mode share in the City of Livermore. For the proposed project, this would equate to one new transit trip during the peak commute hours. This volume of riders would not exceed the carrying capacity of the existing bus service near the project site.

According to the 2019 Alameda County Congestion Management Program (CMP) Transportation Impact Analysis Technical Guidelines, a project would create an adverse effect on transit service if it: (1) causes vehicular congestion that would significantly degrade transit operations, (2) cause a ridership increase that would exceed existing transit capacity, (3) lacks adequate pedestrian connections between the project site and transit stops, or (4) conflict with existing transit service plans or preclude future transit service to the project area. Based on these criteria, the proposed project would not cause an adverse effect to transit operations in the study area.

2930 Pacific Avenue Transportation Analysis

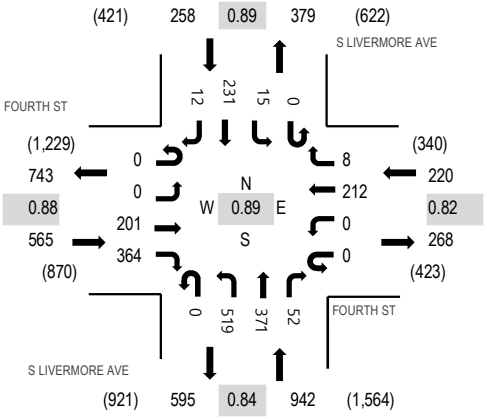
Technical Appendices

Appendix A
Traffic Counts

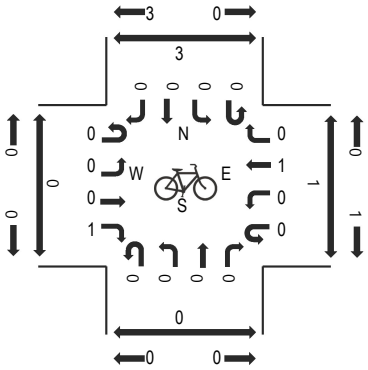
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 S LIVERMORE AVE & FOURTH ST AM
Date: Thursday, January 26, 2023
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

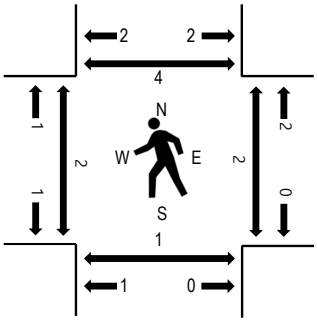
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	FOURTH ST Eastbound				FOURTH ST Westbound				S LIVERMORE AVE Northbound				S LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	26	36	0	0	17	0	0	72	49	1	0	0	19	2	222	1,300	1	1	0	0
7:15 AM	0	0	22	41	0	0	22	5	0	100	57	2	0	2	34	1	286	1,598	1	0	0	0
7:30 AM	0	0	30	51	0	0	36	3	0	113	70	11	0	6	46	0	366	1,871	0	0	1	0
7:45 AM	0	0	48	83	0	0	54	1	0	109	70	12	0	4	44	1	426	1,985	0	1	0	2
8:00 AM	0	0	53	90	0	0	66	1	0	137	87	12	0	2	68	4	520	1,895	2	0	1	1
8:15 AM	0	0	62	98	0	0	50	5	0	136	122	23	0	4	54	5	559		0	1	0	1
8:30 AM	0	0	38	93	0	0	42	1	0	137	92	5	0	5	65	2	480		0	0	0	0
8:45 AM	0	0	45	54	0	0	36	1	0	83	58	6	0	4	45	4	336		0	0	1	0

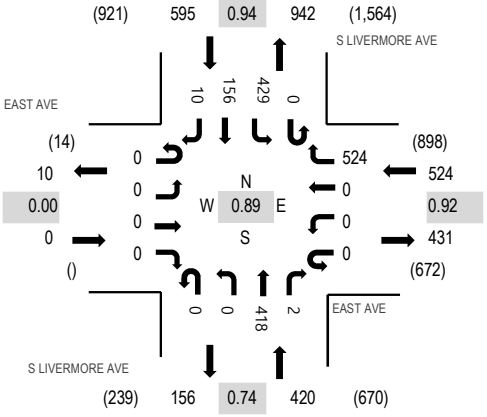
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
Lights	0	0	201	355	0	0	212	8	0	515	365	51	0	15	226	12	1,960
Mediums	0	0	0	9	0	0	0	0	0	4	3	1	0	0	5	0	22
Total	0	0	201	364	0	0	212	8	0	519	371	52	0	15	231	12	1,985

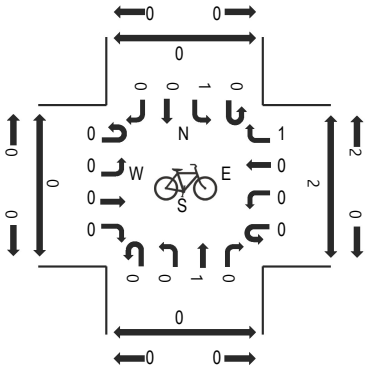
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 S LIVERMORE AVE & EAST AVE AM
Date: Thursday, January 26, 2023
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

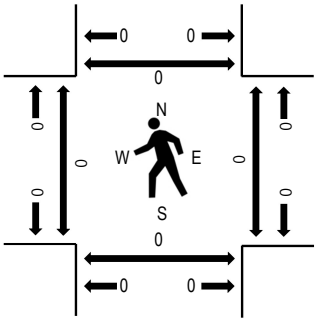
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	EAST AVE Eastbound				EAST AVE Westbound				S LIVERMORE AVE Northbound				S LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	0	0	67	0	0	55	0	0	44	11	0	177	1,022	0	1	0	0
7:15 AM	0	0	0	0	0	0	0	107	0	0	52	1	0	55	20	0	235	1,239	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	112	0	0	82	0	0	68	26	3	291	1,438	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	106	0	0	85	1	0	92	34	1	319	1,539	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	142	0	0	94	0	0	108	46	4	394	1,467	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	140	0	0	141	1	0	116	34	2	434		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	136	0	0	98	0	0	113	42	3	392		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	88	0	0	59	1	0	72	26	1	247		0	0	0	0

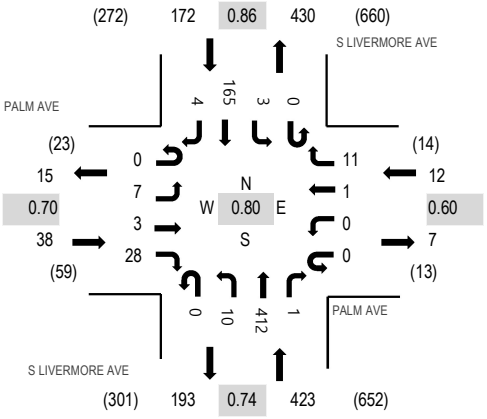
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	2	1	0	0	0	0	4
Lights	0	0	0	0	0	0	0	522	0	0	409	1	0	422	149	10	1,513
Mediums	0	0	0	0	0	0	0	1	0	0	7	0	0	7	7	0	22
Total	0	0	0	0	0	0	0	524	0	0	418	2	0	429	156	10	1,539

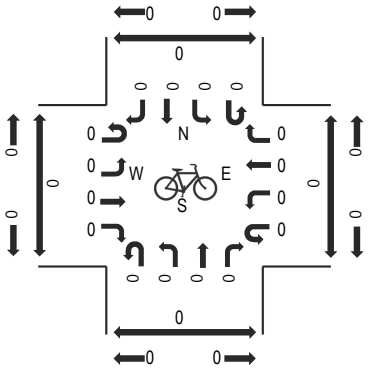
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 S LIVERMORE AVE & PALM AVE AM
Date: Thursday, January 26, 2023
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

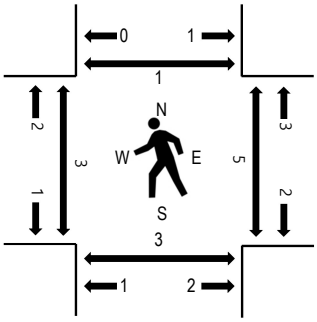
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	PALM AVE Eastbound				PALM AVE Westbound				S LIVERMORE AVE Northbound				S LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	5	0	0	0	0	0	0	56	0	0	0	13	0	74	399	0	0	0	0
7:15 AM	0	0	0	3	0	0	0	0	0	4	53	0	0	0	25	0	85	491	0	0	0	0
7:30 AM	0	3	0	5	0	0	0	1	0	1	70	0	0	2	26	2	110	607	1	1	0	0
7:45 AM	0	1	0	4	0	0	0	1	0	1	85	0	0	0	38	0	130	645	0	1	1	0
8:00 AM	0	2	2	8	0	0	0	3	0	5	95	1	0	1	47	2	166	598	1	2	0	1
8:15 AM	0	3	1	10	0	0	1	2	0	3	139	0	0	1	40	1	201		2	2	2	0
8:30 AM	0	1	0	6	0	0	0	5	0	1	93	0	0	1	40	1	148		0	0	0	0
8:45 AM	0	2	1	2	0	0	0	1	0	1	44	0	0	3	29	0	83		2	3	1	0

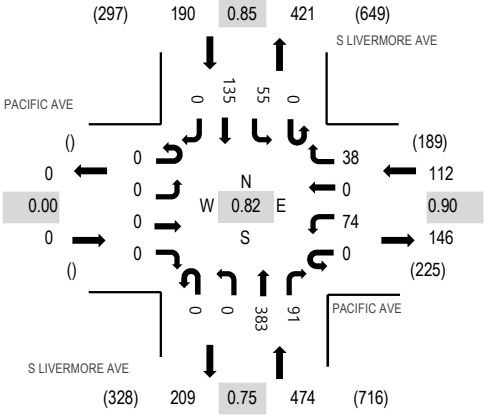
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3
Lights	0	7	3	27	0	0	1	11	0	10	408	1	0	3	161	4	636
Mediums	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	6
Total	0	7	3	28	0	0	1	11	0	10	412	1	0	3	165	4	645

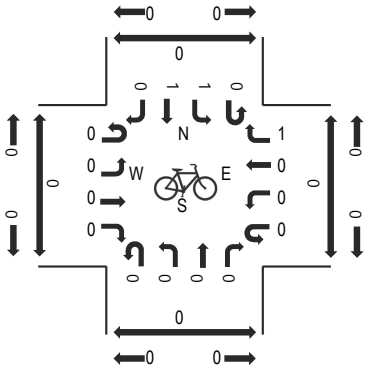
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 S LIVERMORE AVE & PACIFIC AVE AM
Date: Thursday, January 26, 2023
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

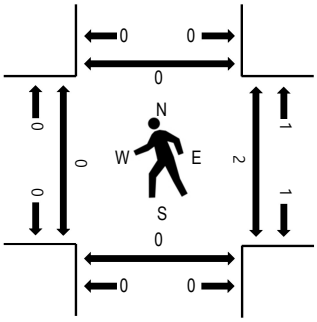
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE Eastbound				PACIFIC AVE Westbound				S LIVERMORE AVE Northbound				S LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	5	0	11	0	0	45	3	0	5	13	0	82	465	0	0	0	0
7:15 AM	0	0	0	0	0	13	0	14	0	0	42	15	0	4	23	0	111	585	0	0	0	0
7:30 AM	0	0	0	0	0	3	0	10	0	0	62	11	0	7	23	0	116	712	0	1	0	0
7:45 AM	0	0	0	0	0	16	0	12	0	0	73	17	0	10	28	0	156	776	0	0	0	0
8:00 AM	0	0	0	0	0	21	0	10	0	0	91	24	0	11	45	0	202	737	0	1	0	0
8:15 AM	0	0	0	0	0	21	0	8	0	0	133	25	0	20	31	0	238		0	1	0	0
8:30 AM	0	0	0	0	0	16	0	8	0	0	86	25	0	14	31	0	180		0	0	0	0
8:45 AM	0	0	0	0	0	16	0	5	0	0	39	25	0	9	23	0	117		0	0	0	0

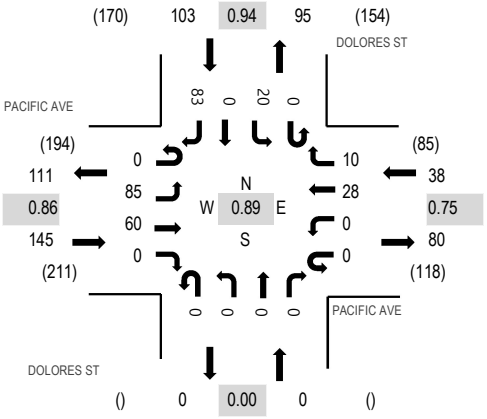
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
Lights	0	0	0	0	0	72	0	37	0	0	377	90	0	53	132	0	761
Mediums	0	0	0	0	0	2	0	1	0	0	4	1	0	2	2	0	12
Total	0	0	0	0	0	74	0	38	0	0	383	91	0	55	135	0	776

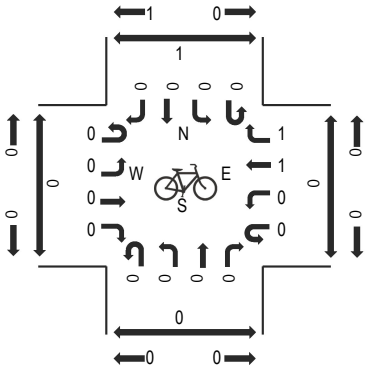
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 5 DOLORES ST & PACIFIC AVE AM
Date: Thursday, January 26, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

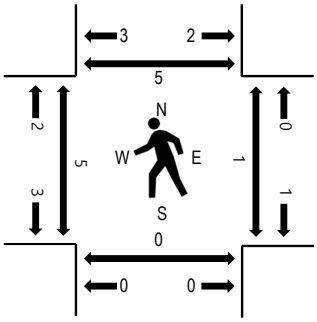
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE Eastbound				PACIFIC AVE Westbound				DOLORES ST Northbound				DOLORES ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	4	3	0	0	0	7	1	0	0	0	0	0	4	0	8	27	180	2	0	0	2
7:15 AM	0	14	4	0	0	0	12	4	0	0	0	0	0	2	0	15	51	224	3	0	0	3
7:30 AM	0	10	8	0	0	0	7	6	0	0	0	0	1	9	0	5	46	253	0	1	0	0
7:45 AM	0	17	6	0	0	0	8	2	0	0	0	0	0	2	0	21	56	277	0	0	0	1
8:00 AM	0	24	11	0	0	0	7	2	0	0	0	0	0	2	0	25	71	286	1	0	0	1
8:15 AM	0	31	11	0	0	0	7	3	0	0	0	0	0	6	0	22	80		1	1	0	0
8:30 AM	0	13	19	0	0	0	8	3	0	0	0	0	0	7	0	20	70		1	0	0	3
8:45 AM	0	17	19	0	0	0	6	2	0	0	0	0	0	5	0	16	65		2	0	0	1

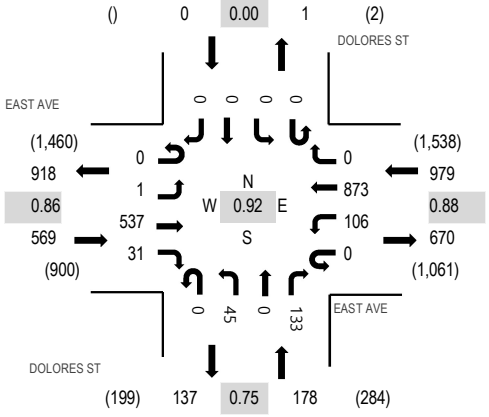
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	81	59	0	0	0	27	10	0	0	0	0	0	19	0	79	275
Mediums	0	4	1	0	0	0	1	0	0	0	0	0	0	1	0	4	11
Total	0	85	60	0	0	0	28	10	0	0	0	0	0	20	0	83	286

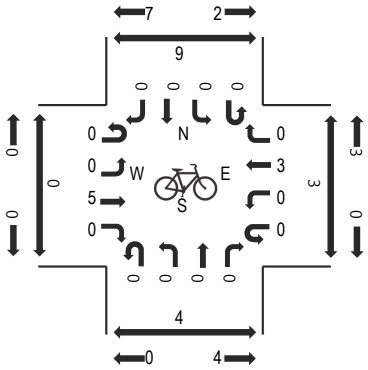
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 DOLORES ST & EAST AVE AM
Date: Wednesday, May 17, 2023
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

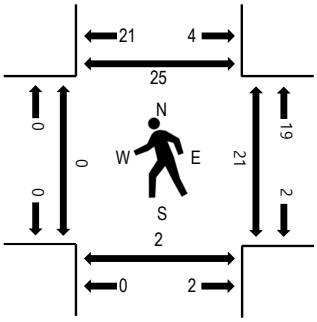
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	EAST AVE Eastbound				EAST AVE Westbound				DOLORES ST Northbound				DOLORES ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	72	4	0	11	96	0	0	14	0	12	0	0	0	0	209	996	0	0	1	1
7:15 AM	0	0	87	1	0	17	122	0	0	7	0	20	0	0	0	0	254	1,185	0	2	0	0
7:30 AM	0	1	69	2	0	10	147	0	0	6	0	16	0	0	0	0	251	1,401	0	1	0	0
7:45 AM	0	0	92	3	0	14	142	0	0	8	0	23	0	0	0	0	282	1,544	0	1	0	1
8:00 AM	0	1	142	7	0	29	172	0	0	14	0	33	0	0	0	0	398	1,726	0	4	1	4
8:15 AM	0	0	127	7	0	34	243	0	0	10	0	49	0	0	0	0	470		0	7	1	7
8:30 AM	0	0	112	7	0	22	215	0	0	10	0	28	0	0	0	0	394		0	2	0	4
8:45 AM	0	0	156	10	0	21	243	0	0	11	0	23	0	0	0	0	464		0	8	0	10

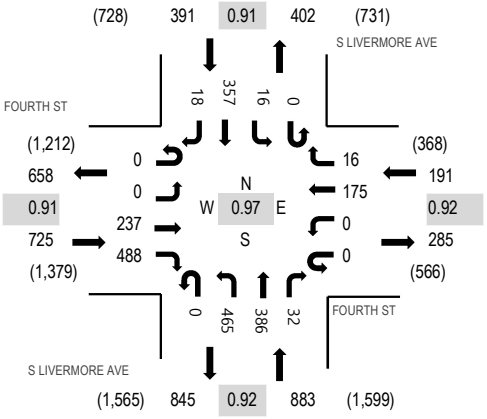
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Lights	0	1	530	29	0	106	865	0	0	43	0	133	0	0	0	0	1,707
Mediums	0	0	7	2	0	0	6	0	0	2	0	0	0	0	0	0	17
Total	0	1	537	31	0	106	873	0	0	45	0	133	0	0	0	0	1,726

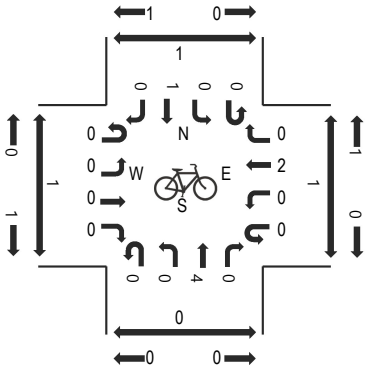
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 S LIVERMORE AVE & FOURTH ST PM
Date: Thursday, January 26, 2023
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

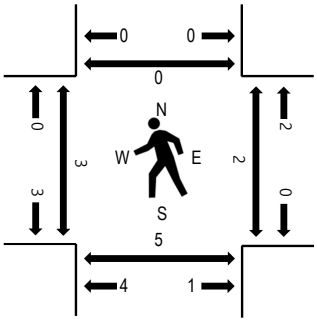
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	FOURTH ST Eastbound				FOURTH ST Westbound				S LIVERMORE AVE Northbound				S LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	64	98	0	0	52	0	0	89	68	6	0	1	85	4	467	1,924	0	1	1	3
4:15 PM	0	0	51	78	0	0	39	3	0	93	77	5	0	3	62	4	415	2,009	1	0	0	2
4:30 PM	0	0	65	126	0	0	40	2	0	92	90	10	0	2	74	4	505	2,157	3	2	1	0
4:45 PM	0	0	50	123	0	0	45	6	0	111	94	4	0	6	97	1	537	2,190	2	1	1	0
5:00 PM	0	0	59	117	0	0	49	3	0	118	92	7	0	6	96	5	552	2,150	0	0	0	0
5:15 PM	0	0	70	135	0	0	39	1	0	112	112	16	0	2	70	6	563		0	1	3	0
5:30 PM	0	0	58	113	0	0	42	6	0	124	88	5	0	2	94	6	538		1	0	1	0
5:45 PM	0	0	66	106	0	0	39	2	0	93	87	6	0	2	91	5	497		1	2	2	1

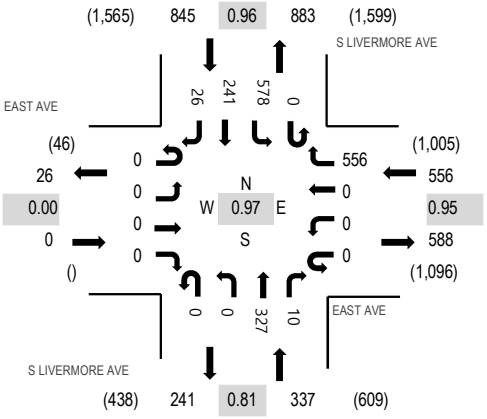
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lights	0	0	234	483	0	0	174	15	0	462	383	31	0	16	356	17	2,171
Mediums	0	0	2	5	0	0	1	1	0	3	3	1	0	0	1	1	18
Total	0	0	237	488	0	0	175	16	0	465	386	32	0	16	357	18	2,190

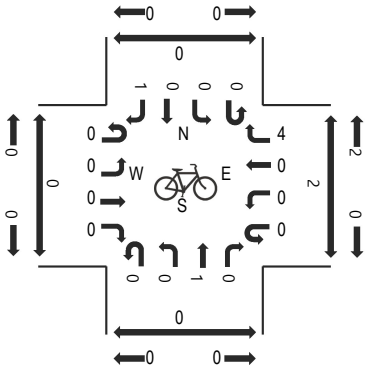
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 S LIVERMORE AVE & EAST AVE PM
Date: Thursday, January 26, 2023
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

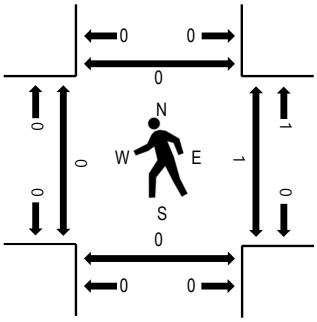
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	EAST AVE Eastbound				EAST AVE Westbound				S LIVERMORE AVE Northbound				S LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	0	0	109	0	0	54	3	0	129	49	5	349	1,490	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	108	0	0	67	1	0	95	41	4	316	1,572	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	115	0	0	77	0	0	146	53	1	392	1,705	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	137	0	0	72	4	0	162	52	6	433	1,738	0	1	0	0
5:00 PM	0	0	0	0	0	0	0	135	0	0	82	1	0	138	67	8	431	1,689	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	138	0	0	102	4	0	154	47	4	449		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	146	0	0	71	1	0	124	75	8	425		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	117	0	0	69	1	0	133	54	10	384		0	2	0	0

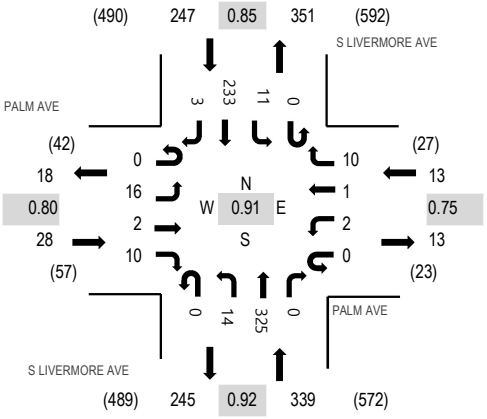
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	0	0	554	0	0	322	10	0	574	239	26	1,725
Mediums	0	0	0	0	0	0	0	2	0	0	5	0	0	4	2	0	13
Total	0	0	0	0	0	0	0	556	0	0	327	10	0	578	241	26	1,738

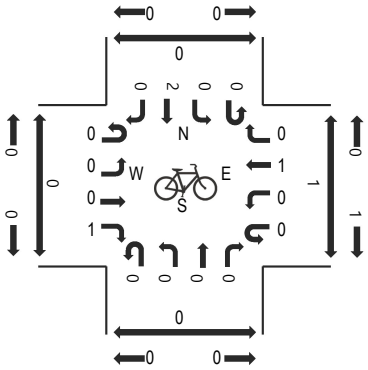
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 S LIVERMORE AVE & PALM AVE PM
Date: Thursday, January 26, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

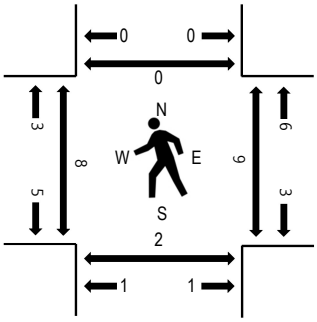
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	PALM AVE Eastbound				PALM AVE Westbound				S LIVERMORE AVE Northbound				S LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	4	2	4	0	0	2	3	0	5	54	0	0	4	58	3	139	547	0	2	0	0
4:15 PM	0	1	0	5	0	0	1	2	0	2	55	0	0	0	47	0	113	580	2	2	3	0
4:30 PM	0	8	1	1	0	0	0	0	0	5	73	0	0	4	54	1	147	627	0	1	0	0
4:45 PM	0	3	0	3	0	1	1	3	0	4	75	0	0	4	53	1	148	620	1	2	0	0
5:00 PM	0	2	0	5	0	1	0	3	0	2	90	0	0	1	68	0	172	599	4	6	1	0
5:15 PM	0	3	1	1	0	0	0	4	0	3	87	0	0	2	58	1	160		3	0	1	0
5:30 PM	0	5	0	1	0	0	0	2	0	4	50	0	0	3	74	1	140		1	3	1	0
5:45 PM	0	3	0	4	0	0	2	2	0	2	60	1	0	0	51	2	127		1	0	0	0

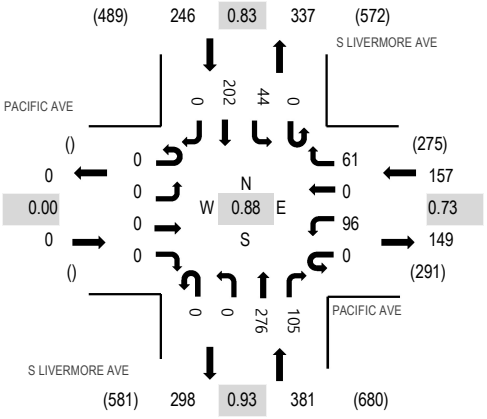
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
Lights	0	15	2	10	0	2	1	10	0	14	321	0	0	11	228	3	617
Mediums	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	8
Total	0	16	2	10	0	2	1	10	0	14	325	0	0	11	233	3	627

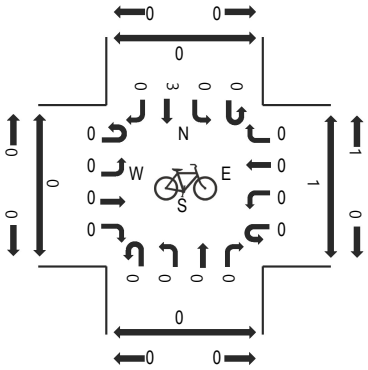
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 S LIVERMORE AVE & PACIFIC AVE PM
Date: Thursday, January 26, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

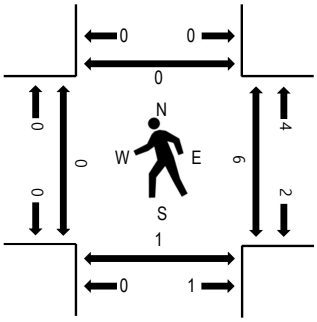
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE Eastbound				PACIFIC AVE Westbound				S LIVERMORE AVE Northbound				S LIVERMORE AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	22	0	12	0	0	47	19	0	8	54	0	162	670	0	2	0	0
4:15 PM	0	0	0	0	0	15	0	6	0	0	51	26	0	7	40	0	145	730	0	0	0	0
4:30 PM	0	0	0	0	0	18	0	10	0	0	67	23	0	14	47	0	179	784	0	1	0	0
4:45 PM	0	0	0	0	0	28	0	12	0	0	66	23	0	6	49	0	184	783	0	2	0	0
5:00 PM	0	0	0	0	0	28	0	26	0	0	67	33	0	15	53	0	222	774	0	1	1	0
5:15 PM	0	0	0	0	0	22	0	13	0	0	76	26	0	9	53	0	199		0	2	0	0
5:30 PM	0	0	0	0	0	20	0	7	0	0	49	22	0	17	63	0	178		0	0	0	0
5:45 PM	0	0	0	0	0	22	0	14	0	0	49	36	0	7	47	0	175		0	0	0	0

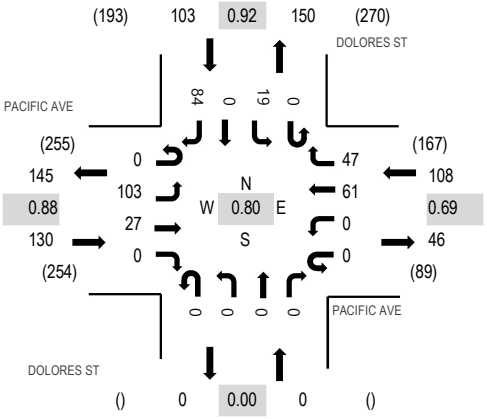
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	96	0	60	0	0	274	105	0	42	200	0	777
Mediums	0	0	0	0	0	0	0	1	0	0	2	0	0	2	2	0	7
Total	0	0	0	0	0	96	0	61	0	0	276	105	0	44	202	0	784

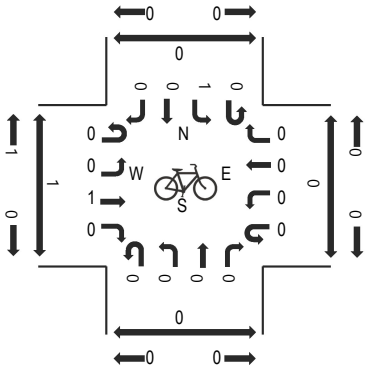
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 5 DOLORES ST & PACIFIC AVE PM
Date: Thursday, January 26, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

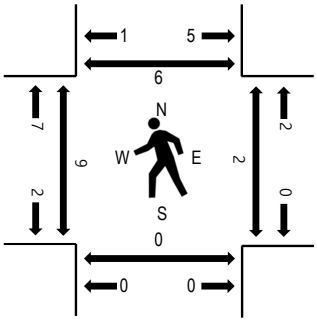
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE Eastbound				PACIFIC AVE Westbound				DOLORES ST Northbound				DOLORES ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	19	2	0	0	0	12	5	0	0	0	0	0	3	0	23	64	275	2	0	0	0
4:15 PM	0	22	10	0	0	0	6	3	0	0	0	0	0	4	0	10	55	318	2	1	0	3
4:30 PM	0	22	8	0	0	0	13	10	0	0	0	0	0	11	0	16	80	341	0	0	0	0
4:45 PM	0	24	3	0	0	0	9	12	0	0	0	0	0	3	0	25	76	335	3	0	0	0
5:00 PM	0	33	8	0	0	0	26	13	0	0	0	0	0	2	0	25	107	339	5	2	0	4
5:15 PM	0	24	8	0	0	0	13	12	0	0	0	0	0	3	0	18	78		1	0	0	2
5:30 PM	0	28	8	0	0	0	9	8	0	0	0	0	0	7	0	14	74		4	0	0	5
5:45 PM	0	30	5	0	0	0	11	5	0	0	0	0	0	4	0	25	80		5	0	0	3

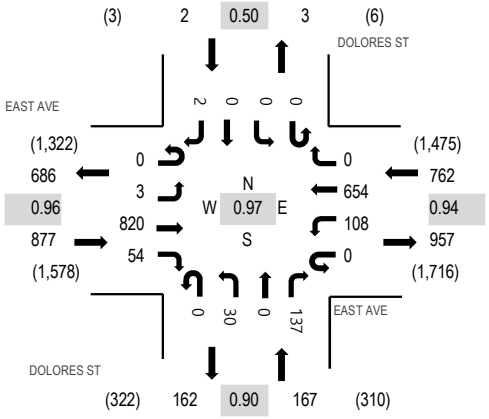
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	100	27	0	0	0	61	47	0	0	0	0	0	19	0	83	337
Mediums	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
Total	0	103	27	0	0	0	61	47	0	0	0	0	0	19	0	84	341

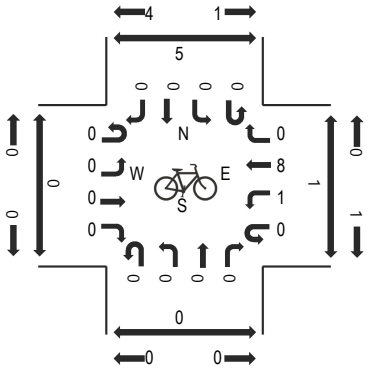
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 DOLORES ST & EAST AVE PM
Date: Wednesday, May 17, 2023
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

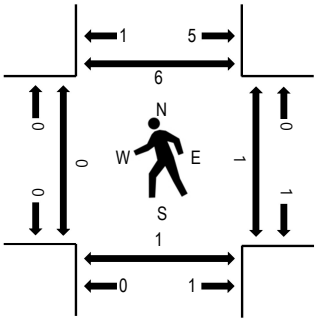
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	EAST AVE Eastbound				EAST AVE Westbound				DOLORES ST Northbound				DOLORES ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	159	13	0	24	136	0	0	8	0	23	0	0	0	0	363	1,595	0	1	2	4
4:15 PM	0	0	163	9	0	25	150	1	0	5	0	33	0	0	0	0	386	1,697	0	3	0	1
4:30 PM	0	1	152	16	0	22	164	1	0	10	0	37	0	0	0	1	404	1,778	0	0	0	0
4:45 PM	0	0	205	11	0	24	165	0	0	3	0	34	0	0	0	0	442	1,808	0	0	0	2
5:00 PM	0	0	201	15	0	29	177	0	0	11	0	31	0	0	0	1	465	1,771	0	0	1	1
5:15 PM	0	1	215	13	0	23	172	0	0	8	0	35	0	0	0	0	467		0	0	0	0
5:30 PM	0	2	199	15	0	32	140	0	0	8	0	37	0	0	0	1	434		0	1	0	3
5:45 PM	0	0	170	18	0	33	157	0	0	5	0	22	0	0	0	0	405		0	0	0	1

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	3	813	52	0	108	648	0	0	28	0	137	0	0	0	2	1,791
Mediums	0	0	7	2	0	0	6	0	0	2	0	0	0	0	0	0	17
Total	0	3	820	54	0	108	654	0	0	30	0	137	0	0	0	2	1,808

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 10
PACIFIC AVE E.O S LIVERMORE AVE

Start Time	26-Jan-23 Thu	EB	WB							Total
12:00 AM		7	5							12
01:00		4	4							8
02:00		2	1							3
03:00		3	6							9
04:00		3	11							14
05:00		14	15							29
06:00		34	29							63
07:00		72	85							157
08:00		**158**	**110**							**268**
09:00		81	88							169
10:00		68	68							136
11:00		91	99							190
12:00 PM		119	125							244
01:00		128	101							229
02:00		128	122							250
03:00		141	128							269
04:00		130	126							256
05:00		**169**	**151**							**320**
06:00		103	97							200
07:00		72	62							134
08:00		49	42							91
09:00		29	26							55
10:00		14	16							30
11:00		11	10							21
Total		1630	1527							3157
Percent		51.6%	48.4%							
AM Peak	-	08:00	08:00	-	-	-	-	-	-	08:00
Vol.	-	158	110	-	-	-	-	-	-	268
PM Peak	-	17:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	169	151	-	-	-	-	-	-	320
Grand Total		1630	1527							3157
Percent		51.6%	48.4%							
ADT		ADT 3,157		AADT 3,157						

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Site Code: 11
S LIVERMORE AVE N.O PALM AVE

Start Time	26-Jan-23 Thu	NB	SB							Total
12:00 AM		6	12							18
01:00		5	2							7
02:00		4	4							8
03:00		11	4							15
04:00		24	12							36
05:00		70	27							97
06:00		167	40							207
07:00		272	105							377
08:00		**389**	**169**							**558**
09:00		198	153							351
10:00		164	161							325
11:00		234	163							397
12:00 PM		242	199							441
01:00		212	190							402
02:00		225	211							436
03:00		264	**288**							552
04:00		275	229							504
05:00		**308**	259							**567**
06:00		212	227							439
07:00		140	142							282
08:00		87	103							190
09:00		56	70							126
10:00		31	31							62
11:00		10	17							27
Total		3606	2818							6424
Percent		56.1%	43.9%							
AM Peak	-	08:00	08:00	-	-	-	-	-	-	08:00
Vol.	-	389	169	-	-	-	-	-	-	558
PM Peak	-	17:00	15:00	-	-	-	-	-	-	17:00
Vol.	-	308	288	-	-	-	-	-	-	567
Grand Total		3606	2818							6424
Percent		56.1%	43.9%							
ADT		ADT 6,424		AADT 6,424						

Appendix B
Level of Service Calculations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	201	364	0	212	8	519	371	52	15	231	12
Future Volume (vph)	0	201	364	0	212	8	519	371	52	15	231	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00			0.95	
Frpb, ped/bikes		1.00	1.00		0.99		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.99		1.00	0.98			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (prot)		1863	1583		3515		1770	1823			3502	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (perm)		1863	1583		3515		1770	1823			3502	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	218	396	0	230	9	564	403	57	16	251	13
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	4	0
Lane Group Flow (vph)	0	218	396	0	239	0	564	457	0	0	276	0
Confl. Peds. (#/hr)			1			4			2			2
Turn Type		NA	custom		NA		Split	NA		Split	NA	
Protected Phases		8	8 3		8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)		17.1	55.7		17.1		74.6	74.6			14.8	
Effective Green, g (s)		17.1	55.7		17.1		74.6	74.6			14.8	
Actuated g/C Ratio		0.14	0.46		0.14		0.62	0.62			0.12	
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		265	734		500		1100	1133			431	
v/s Ratio Prot		c0.12	0.25		0.07		c0.32	0.25			c0.08	
v/s Ratio Perm												
v/c Ratio		0.82	0.53		0.47		0.51	0.40			0.64	
Uniform Delay, d1		49.9	22.9		47.3		12.6	11.4			50.0	
Progression Factor		1.00	1.00		1.00		0.04	0.01			1.00	
Incremental Delay, d2		18.2	0.7		0.7		1.4	0.8			3.2	
Delay (s)		68.2	23.7		48.0		1.9	1.0			53.3	
Level of Service		E	C		D		A	A			D	
Approach Delay (s/veh)		39.5			48.0			1.5			53.3	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	524	0	418	2	429	156	10
Future Volume (vph)	0	0	0	0	0	524	0	418	2	429	156	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.5		4.5			4.5	
Lane Util. Factor						0.88		0.95			0.95	
Frt						0.85		0.99			0.99	
Flt Protected						1.00		1.00			0.96	
Satd. Flow (prot)						2787		3537			3407	
Flt Permitted						1.00		1.00			0.96	
Satd. Flow (perm)						2787		3537			3407	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	570	0	454	2	466	170	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	0	570	0	456	0	0	646	0
Turn Type						Prot		NA		Split	NA	
Protected Phases						3		2		1 3	1 3	
Permitted Phases												
Actuated Green, G (s)						38.6		31.5			79.5	
Effective Green, g (s)						38.6		31.5			79.5	
Actuated g/C Ratio						0.32		0.26			0.66	
Clearance Time (s)						4.5		4.5				
Vehicle Extension (s)						3.0		3.0				
Lane Grp Cap (vph)						896		928			2257	
v/s Ratio Prot						c0.20		c0.13			c0.19	
v/s Ratio Perm												
v/c Ratio						0.63		0.49			0.28	
Uniform Delay, d1						34.7		37.4			8.4	
Progression Factor						1.00		1.00			0.05	
Incremental Delay, d2						3.4		1.8			0.0	
Delay (s)						38.1		39.3			0.5	
Level of Service						D		D			A	
Approach Delay (s/veh)		0.0			38.1			39.3			0.5	
Approach LOS		A			D			D			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	3	28	0	1	11	10	412	1	3	165	4
Future Vol, veh/h	7	3	28	0	1	11	10	412	1	3	165	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	3	30	0	1	12	11	448	1	3	179	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	658	659	182	658	660	448	184	0	0	449	0	0
Stage 1	188	188	-	470	470	-	-	-	-	-	-	-
Stage 2	470	471	-	187	190	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	377	384	861	378	383	610	1391	-	-	1111	-	-
Stage 1	814	744	-	574	560	-	-	-	-	-	-	-
Stage 2	574	560	-	814	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	365	380	861	357	379	610	1391	-	-	1111	-	-
Mov Cap-2 Maneuver	365	380	-	357	379	-	-	-	-	-	-	-
Stage 1	811	742	-	569	556	-	-	-	-	-	-	-
Stage 2	557	555	-	780	741	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.04	11.34	0.18	0.14
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1391	-	-	638	581	1111	-	-
HCM Lane V/C Ratio	0.008	-	-	0.065	0.022	0.003	-	-
HCM Control Delay (s/veh)	7.6	-	-	11	11.3	8.2	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	74	38	383	91	55	135
Future Vol, veh/h	74	38	383	91	55	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	41	416	99	60	147

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	732	466	0	0	515	0
Stage 1	466	-	-	-	-	-
Stage 2	266	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	388	597	-	-	1050	-
Stage 1	632	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	366	597	-	-	1050	-
Mov Cap-2 Maneuver	366	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	15.51	0	2.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	366	597	1050	-
HCM Lane V/C Ratio	-	-	0.22	0.069	0.057	-
HCM Control Delay (s/veh)	-	-	17.6	11.5	8.6	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.2	0.2	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	85	60	28	10	20	83
Future Vol, veh/h	85	60	28	10	20	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	92	65	30	11	22	90
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	8.3	7.4	7.5
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	59%	0%	19%
Vol Thru, %	41%	74%	0%
Vol Right, %	0%	26%	81%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	145	38	103
LT Vol	85	0	20
Through Vol	60	28	0
RT Vol	0	10	83
Lane Flow Rate	158	41	112
Geometry Grp	1	1	1
Degree of Util (X)	0.187	0.047	0.122
Departure Headway (Hd)	4.281	4.095	3.939
Convergence, Y/N	Yes	Yes	Yes
Cap	834	862	916
Service Time	2.334	2.182	1.939
HCM Lane V/C Ratio	0.189	0.048	0.122
HCM Control Delay, s/veh	8.3	7.4	7.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.1	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	537	31	106	873	0	45	0	133	0	0	0
Future Volume (veh/h)	1	537	31	106	873	0	45	0	133	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	584	34	115	949	0	49	0	145	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	2141	125	99	2422	0	297	0	255	0	2	0
Arrive On Green	0.00	0.63	0.63	0.06	0.68	0.00	0.17	0.00	0.17	0.00	0.00	0.00
Sat Flow, veh/h	1781	3413	198	1781	3647	0	1781	0	1525	0	1870	0
Grp Volume(v), veh/h	1	304	314	115	949	0	49	0	145	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1834	1781	1777	0	1781	0	1525	0	1870	0
Q Serve(g_s), s	0.1	6.9	6.9	5.0	10.4	0.0	2.1	0.0	7.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	6.9	6.9	5.0	10.4	0.0	2.1	0.0	7.9	0.0	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	2	1115	1151	99	2422	0	297	0	255	0	2	0
V/C Ratio(X)	0.41	0.27	0.27	1.16	0.39	0.00	0.16	0.00	0.57	0.00	0.00	0.00
Avail Cap(c_a), veh/h	99	1115	1151	99	2422	0	584	0	500	0	52	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	44.9	7.5	7.5	42.5	6.2	0.0	32.1	0.0	34.5	0.0	0.0	0.0
Incr Delay (d2), s/veh	83.8	0.6	0.6	140.6	0.5	0.0	0.3	0.0	2.0	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.5	2.6	6.0	3.4	0.0	0.9	0.0	3.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	128.7	8.1	8.1	183.1	6.7	0.0	32.4	0.0	36.5	0.0	0.0	0.0
LnGrp LOS	F	A	A	F	A		C		D			
Approach Vol, veh/h		619			1064			194			0	
Approach Delay, s/veh		8.3			25.8			35.5			0.0	
Approach LOS		A			C			D				

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	19.5	9.5	61.0	0.0	4.6	65.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	5.0	35.0	2.5	5.0	35.0
Max Q Clear Time (g_c+I1), s	9.9	7.0	8.9	0.0	2.1	12.4
Green Ext Time (p_c), s	0.9	0.0	4.0	0.0	0.0	7.2

Intersection Summary	
HCM 7th Control Delay, s/veh	21.0
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	139	107	4	0	0
Future Vol, veh/h	7	139	107	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	151	116	4	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	121	0	-	0	285	118
Stage 1	-	-	-	-	118	-
Stage 2	-	-	-	-	166	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1467	-	-	-	705	933
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	863	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1467	-	-	-	701	933
Mov Cap-2 Maneuver	-	-	-	-	701	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	863	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.36	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	86	-	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s/veh)	7.5	0	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	2	2	93	101	5
Future Vol, veh/h	5	2	2	93	101	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	2	2	101	110	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	218	113	115	0	-	0
Stage 1	113	-	-	-	-	-
Stage 2	105	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	770	940	1474	-	-	-
Stage 1	912	-	-	-	-	-
Stage 2	919	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	769	940	1474	-	-	-
Mov Cap-2 Maneuver	769	-	-	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	919	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.48	0.16	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	38	-	811	-	-
HCM Lane V/C Ratio	0.001	-	0.009	-	-
HCM Control Delay (s/veh)	7.4	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	237	488	0	175	16	465	386	32	16	357	18
Future Volume (vph)	0	237	488	0	175	16	465	386	32	16	357	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00			0.95	
Frpb, ped/bikes		1.00	1.00		1.00		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.98		1.00	0.98			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (prot)		1863	1583		3496		1770	1838			3504	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (perm)		1863	1583		3496		1770	1838			3504	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	258	530	0	190	17	505	420	35	17	388	20
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	258	530	0	207	0	505	453	0	0	422	0
Confl. Peds. (#/hr)			5						2			3
Turn Type		NA	custom		NA		Split	NA		Split	NA	
Protected Phases		8	8 3		8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)		26.4	77.9		26.4		87.0	87.0			23.1	
Effective Green, g (s)		26.4	77.9		26.4		87.0	87.0			23.1	
Actuated g/C Ratio		0.18	0.52		0.18		0.58	0.58			0.15	
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		327	822		615		1026	1066			539	
v/s Ratio Prot		c0.14	c0.33		0.06		c0.29	0.25			c0.12	
v/s Ratio Perm												
v/c Ratio		0.78	0.64		0.33		0.49	0.42			0.78	
Uniform Delay, d1		59.1	26.0		54.1		18.5	17.5			61.0	
Progression Factor		1.00	1.00		1.00		0.02	0.01			1.00	
Incremental Delay, d2		11.9	1.7		0.3		1.3	1.0			7.3	
Delay (s)		71.0	27.7		54.4		1.7	1.2			68.3	
Level of Service		E	C		D		A	A			E	
Approach Delay (s/veh)		41.9			54.4			1.5			68.3	
Approach LOS		D			D			A			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	556	0	327	10	578	241	26
Future Volume (vph)	0	0	0	0	0	556	0	327	10	578	241	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.5		4.5			4.5	
Lane Util. Factor						0.88		0.95			0.95	
Frpb, ped/bikes						1.00		0.99			1.00	
Flpb, ped/bikes						1.00		1.00			1.00	
Frt						0.85		0.99			0.99	
Flt Protected						1.00		1.00			0.96	
Satd. Flow (prot)						2787		3522			3407	
Flt Permitted						1.00		1.00			0.96	
Satd. Flow (perm)						2787		3522			3407	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	604	0	355	11	628	262	28
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	0	604	0	364	0	0	916	0
Confl. Peds. (#/hr)									1			
Turn Type						Prot		NA		Split	NA	
Protected Phases						3		2		1 3	1 3	
Permitted Phases												
Actuated Green, G (s)						51.5		31.0			110.0	
Effective Green, g (s)						51.5		31.0			110.0	
Actuated g/C Ratio						0.34		0.21			0.73	
Clearance Time (s)						4.5		4.5				
Vehicle Extension (s)						3.0		3.0				
Lane Grp Cap (vph)						956		727			2498	
v/s Ratio Prot						c0.22		c0.10			c0.27	
v/s Ratio Perm												
v/c Ratio						0.63		0.50			0.36	
Uniform Delay, d1						41.2		52.6			7.2	
Progression Factor						1.00		1.00			0.04	
Incremental Delay, d2						3.1		2.4			0.0	
Delay (s)						44.4		55.1			0.4	
Level of Service						D		E			A	
Approach Delay (s/veh)		0.0			44.4			55.1			0.4	
Approach LOS		A			D			E			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	2	10	2	1	10	14	325	0	11	233	3
Future Vol, veh/h	16	2	10	2	1	10	14	325	0	11	233	3
Conflicting Peds, #/hr	0	0	2	0	0	0	0	0	9	0	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	2	11	2	1	11	15	353	0	12	253	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	671	680	265	673	681	362	265	0	0	362	0	0
Stage 1	287	287	-	393	393	-	-	-	-	-	-	-
Stage 2	384	393	-	280	288	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	370	373	774	369	373	682	1299	-	-	1196	-	-
Stage 1	721	674	-	632	606	-	-	-	-	-	-	-
Stage 2	639	606	-	726	673	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	352	359	766	350	359	677	1290	-	-	1186	-	-
Mov Cap-2 Maneuver	352	359	-	350	359	-	-	-	-	-	-	-
Stage 1	708	663	-	619	594	-	-	-	-	-	-	-
Stage 2	620	594	-	705	661	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	13.84	11.61	0.32	0.36
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1290	-	-	437	558	1186	-	-
HCM Lane V/C Ratio	0.012	-	-	0.07	0.025	0.01	-	-
HCM Control Delay (s/veh)	7.8	-	-	13.8	11.6	8.1	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	96	61	276	105	44	202
Future Vol, veh/h	96	61	276	105	44	202
Conflicting Peds, #/hr	1	0	0	6	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	104	66	300	114	48	220

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	679	363	0	0	420	0
Stage 1	363	-	-	-	-	-
Stage 2	316	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	417	682	-	-	1139	-
Stage 1	704	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	397	678	-	-	1132	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	700	-	-	-	-	-
Stage 2	707	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	14.8	0	1.49
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	397	678	1132	-
HCM Lane V/C Ratio	-	-	0.263	0.098	0.042	-
HCM Control Delay (s/veh)	-	-	17.3	10.9	8.3	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1	0.3	0.1	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	103	27	61	47	19	84
Future Vol, veh/h	103	27	61	47	19	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	112	29	66	51	21	91
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	8.4	7.7	7.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	79%	0%	18%
Vol Thru, %	21%	56%	0%
Vol Right, %	0%	44%	82%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	130	108	103
LT Vol	103	0	19
Through Vol	27	61	0
RT Vol	0	47	84
Lane Flow Rate	141	117	112
Geometry Grp	1	1	1
Degree of Util (X)	0.172	0.13	0.126
Departure Headway (Hd)	4.381	3.98	4.054
Convergence, Y/N	Yes	Yes	Yes
Cap	810	885	890
Service Time	2.457	2.073	2.054
HCM Lane V/C Ratio	0.174	0.132	0.126
HCM Control Delay, s/veh	8.4	7.7	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.4	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	820	54	108	654	0	30	0	137	0	0	2
Future Volume (veh/h)	3	820	54	108	654	0	30	0	137	0	0	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	891	59	117	711	0	33	0	149	0	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	7	1378	91	150	1733	0	250	0	222	0	0	3
Arrive On Green	0.00	0.41	0.41	0.08	0.49	0.00	0.14	0.00	0.14	0.00	0.00	0.00
Sat Flow, veh/h	1781	3383	224	1781	3647	0	1781	0	1582	0	0	1585
Grp Volume(v), veh/h	3	468	482	117	711	0	33	0	149	0	0	2
Grp Sat Flow(s),veh/h/ln	1781	1777	1830	1781	1777	0	1781	0	1582	0	0	1585
Q Serve(g_s), s	0.1	10.4	10.4	3.2	6.3	0.0	0.8	0.0	4.4	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.1	10.4	10.4	3.2	6.3	0.0	0.8	0.0	4.4	0.0	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.00	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	7	724	745	150	1733	0	250	0	222	0	0	3
V/C Ratio(X)	0.41	0.65	0.65	0.78	0.41	0.00	0.13	0.00	0.67	0.00	0.00	0.62
Avail Cap(c_a), veh/h	181	1212	1248	236	2533	0	1070	0	950	0	0	81
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	24.4	11.7	11.7	22.0	8.1	0.0	18.5	0.0	20.0	0.0	0.0	24.5
Incr Delay (d2), s/veh	33.3	1.0	0.9	8.4	0.2	0.0	0.2	0.0	3.5	0.0	0.0	116.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.5	3.6	1.6	1.9	0.0	0.3	0.0	1.7	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.7	12.7	12.7	30.4	8.2	0.0	18.7	0.0	23.5	0.0	0.0	141.1
LnGrp LOS	E	B	B	C	A		B		C			F
Approach Vol, veh/h		953			828			182			2	
Approach Delay, s/veh		12.8			11.4			22.7			141.1	
Approach LOS		B			B			C			F	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	11.4	8.6	24.5	4.6	4.7	28.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	6.5	33.5	2.5	5.0	35.0
Max Q Clear Time (g_c+I1), s	6.4	5.2	12.4	2.1	2.1	8.3
Green Ext Time (p_c), s	1.0	0.0	6.4	0.0	0.0	5.4

Intersection Summary	
HCM 7th Control Delay, s/veh	13.2
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	130	144	1	1	15
Future Vol, veh/h	19	130	144	1	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	141	157	1	1	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	158	0	-	0	340	157
Stage 1	-	-	-	-	157	-
Stage 2	-	-	-	-	183	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1422	-	-	-	656	888
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	849	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1422	-	-	-	646	888
Mov Cap-2 Maneuver	-	-	-	-	646	-
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	849	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.97	0	9.23
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	230	-	-	-	868
HCM Lane V/C Ratio	0.015	-	-	-	0.02
HCM Control Delay (s/veh)	7.6	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	1	4	146	102	14
Future Vol, veh/h	13	1	4	146	102	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	1	4	159	111	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	286	118	126	0	-	0
Stage 1	118	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	704	933	1460	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	702	933	1460	-	-	-
Mov Cap-2 Maneuver	702	-	-	-	-	-
Stage 1	904	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.15	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	48	-	715	-	-
HCM Lane V/C Ratio	0.003	-	0.021	-	-
HCM Control Delay (s/veh)	7.5	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	211	382	0	222	8	544	389	55	16	242	13
Future Volume (vph)	0	211	382	0	222	8	544	389	55	16	242	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00			0.95	
Frpb, ped/bikes		1.00	1.00		0.99		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.99		1.00	0.98			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (prot)		1863	1583		3516		1770	1823			3501	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (perm)		1863	1583		3516		1770	1823			3501	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	229	415	0	241	9	591	423	60	17	263	14
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	3	0
Lane Group Flow (vph)	0	229	415	0	250	0	591	480	0	0	291	0
Confl. Peds. (#/hr)			1			4			2			2
Turn Type		NA	custom		NA		Split	NA		Split	NA	
Protected Phases		8	8 3		8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)		17.3	55.2		17.3		73.9	73.9			15.3	
Effective Green, g (s)		17.3	55.2		17.3		73.9	73.9			15.3	
Actuated g/C Ratio		0.14	0.46		0.14		0.62	0.62			0.13	
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		268	728		506		1090	1122			446	
v/s Ratio Prot		c0.12	0.26		0.07		c0.33	0.26			c0.08	
v/s Ratio Perm												
v/c Ratio		0.85	0.57		0.49		0.54	0.42			0.65	
Uniform Delay, d1		50.1	23.7		47.3		13.2	12.0			49.8	
Progression Factor		1.00	1.00		1.00		0.04	0.01			1.00	
Incremental Delay, d2		22.3	1.0		0.7		1.5	0.9			3.3	
Delay (s)		72.4	24.7		48.0		2.1	1.1			53.2	
Level of Service		E	C		D		A	A			D	
Approach Delay (s/veh)		41.7			48.0			1.6			53.2	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	550	0	438	2	450	164	10
Future Volume (vph)	0	0	0	0	0	550	0	438	2	450	164	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.5		4.5			4.5	
Lane Util. Factor						0.88		0.95			0.95	
Frt						0.85		0.99			0.99	
Flt Protected						1.00		1.00			0.96	
Satd. Flow (prot)						2787		3537			3408	
Flt Permitted						1.00		1.00			0.96	
Satd. Flow (perm)						2787		3537			3408	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	598	0	476	2	489	178	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	0	598	0	478	0	0	677	0
Turn Type						Prot		NA		Split	NA	
Protected Phases						3		2		1 3	1 3	
Permitted Phases												
Actuated Green, G (s)						37.9		31.5			79.5	
Effective Green, g (s)						37.9		31.5			79.5	
Actuated g/C Ratio						0.32		0.26			0.66	
Clearance Time (s)						4.5		4.5				
Vehicle Extension (s)						3.0		3.0				
Lane Grp Cap (vph)						880		928			2257	
v/s Ratio Prot						c0.21		c0.14			c0.20	
v/s Ratio Perm												
v/c Ratio						0.67		0.51			0.29	
Uniform Delay, d1						35.7		37.7			8.5	
Progression Factor						1.00		1.00			0.05	
Incremental Delay, d2						4.2		2.0			0.0	
Delay (s)						39.9		39.7			0.5	
Level of Service						D		D			A	
Approach Delay (s/veh)		0.0			39.9			39.7			0.5	
Approach LOS		A			D			D			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	3	29	0	1	11	10	432	1	3	173	4
Future Vol, veh/h	7	3	29	0	1	11	10	432	1	3	173	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	3	32	0	1	12	11	470	1	3	188	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	689	689	190	688	691	470	192	0	0	471	0	0
Stage 1	197	197	-	492	492	-	-	-	-	-	-	-
Stage 2	492	492	-	196	199	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	360	369	852	360	368	593	1381	-	-	1091	-	-
Stage 1	805	738	-	559	548	-	-	-	-	-	-	-
Stage 2	559	547	-	806	736	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	348	365	852	340	364	593	1381	-	-	1091	-	-
Mov Cap-2 Maneuver	348	365	-	340	364	-	-	-	-	-	-	-
Stage 1	803	736	-	554	543	-	-	-	-	-	-	-
Stage 2	542	543	-	770	734	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.18	11.54	0.17	0.14
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1381	-	-	625	564	1091	-	-
HCM Lane V/C Ratio	0.008	-	-	0.068	0.023	0.003	-	-
HCM Control Delay (s/veh)	7.6	-	-	11.2	11.5	8.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	78	40	402	95	58	142
Future Vol, veh/h	78	40	402	95	58	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	85	43	437	103	63	154

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	769	489	0	0	540	0
Stage 1	489	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	369	579	-	-	1028	-
Stage 1	617	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	347	579	-	-	1028	-
Mov Cap-2 Maneuver	347	-	-	-	-	-
Stage 1	617	-	-	-	-	-
Stage 2	720	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	16.34	0	2.53
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	347	579	1028	-
HCM Lane V/C Ratio	-	-	0.245	0.075	0.061	-
HCM Control Delay (s/veh)	-	-	18.7	11.7	8.7	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0.2	0.2	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	89	63	29	10	21	87
Future Vol, veh/h	89	63	29	10	21	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	68	32	11	23	95
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	8.4	7.4	7.5
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	59%	0%	19%
Vol Thru, %	41%	74%	0%
Vol Right, %	0%	26%	81%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	152	39	108
LT Vol	89	0	21
Through Vol	63	29	0
RT Vol	0	10	87
Lane Flow Rate	165	42	117
Geometry Grp	1	1	1
Degree of Util (X)	0.197	0.048	0.129
Departure Headway (Hd)	4.29	4.114	3.96
Convergence, Y/N	Yes	Yes	Yes
Cap	831	856	911
Service Time	2.349	2.209	1.96
HCM Lane V/C Ratio	0.199	0.049	0.128
HCM Control Delay, s/veh	8.4	7.4	7.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.2	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	563	33	111	916	0	47	0	139	0	0	0
Future Volume (veh/h)	1	563	33	111	916	0	47	0	139	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	612	36	121	996	0	51	0	151	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	2129	125	99	2411	0	303	0	260	0	2	0
Arrive On Green	0.00	0.62	0.62	0.06	0.68	0.00	0.17	0.00	0.17	0.00	0.00	0.00
Sat Flow, veh/h	1781	3410	200	1781	3647	0	1781	0	1526	0	1870	0
Grp Volume(v), veh/h	1	319	329	121	996	0	51	0	151	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1834	1781	1777	0	1781	0	1526	0	1870	0
Q Serve(g_s), s	0.1	7.4	7.4	5.0	11.3	0.0	2.2	0.0	8.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	7.4	7.4	5.0	11.3	0.0	2.2	0.0	8.2	0.0	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	2	1109	1145	99	2411	0	303	0	260	0	2	0
V/C Ratio(X)	0.41	0.29	0.29	1.22	0.41	0.00	0.17	0.00	0.58	0.00	0.00	0.00
Avail Cap(c_a), veh/h	99	1109	1145	99	2411	0	584	0	500	0	52	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	44.9	7.7	7.7	42.5	6.5	0.0	31.9	0.0	34.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	83.8	0.7	0.6	162.0	0.5	0.0	0.3	0.0	2.1	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.7	2.8	6.6	3.7	0.0	1.0	0.0	3.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	128.7	8.4	8.4	204.5	7.0	0.0	32.2	0.0	36.4	0.0	0.0	0.0
LnGrp LOS	F	A	A	F	A		C		D			
Approach Vol, veh/h		649			1117			202			0	
Approach Delay, s/veh		8.6			28.4			35.4			0.0	
Approach LOS		A			C			D				

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	19.8	9.5	60.7	0.0	4.6	65.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	5.0	35.0	2.5	5.0	35.0
Max Q Clear Time (g_c+I1), s	10.2	7.0	9.4	0.0	2.1	13.3
Green Ext Time (p_c), s	1.0	0.0	4.2	0.0	0.0	7.5

Intersection Summary	
HCM 7th Control Delay, s/veh	22.6
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	146	112	4	0	0
Future Vol, veh/h	7	146	112	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	159	122	4	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	126	0	-	0	298	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	174	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1460	-	-	-	693	927
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	856	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1460	-	-	-	689	927
Mov Cap-2 Maneuver	-	-	-	-	689	-
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	856	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.34	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	82	-	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s/veh)	7.5	0	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	2	2	98	106	5
Future Vol, veh/h	5	2	2	98	106	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	2	2	107	115	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	229	118	121	0	-	0
Stage 1	118	-	-	-	-	-
Stage 2	111	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	759	934	1467	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	914	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	758	934	1467	-	-	-
Mov Cap-2 Maneuver	758	-	-	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	914	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.54	0.15	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	36	-	801	-	-
HCM Lane V/C Ratio	0.001	-	0.009	-	-
HCM Control Delay (s/veh)	7.5	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	247	508	0	182	17	485	402	33	17	372	19
Future Volume (vph)	0	247	508	0	182	17	485	402	33	17	372	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00			0.95	
Frpb, ped/bikes		1.00	1.00		1.00		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.98		1.00	0.98			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (prot)		1863	1583		3495		1770	1838			3504	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (perm)		1863	1583		3495		1770	1838			3504	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	268	552	0	198	18	527	437	36	18	404	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	268	552	0	216	0	527	471	0	0	440	0
Confl. Peds. (#/hr)			5						2			3
Turn Type		NA	custom		NA		Split	NA		Split	NA	
Protected Phases		8	8 3		8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)		27.1	77.3		27.1		85.7	85.7			23.7	
Effective Green, g (s)		27.1	77.3		27.1		85.7	85.7			23.7	
Actuated g/C Ratio		0.18	0.52		0.18		0.57	0.57			0.16	
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		336	815		631		1011	1050			553	
v/s Ratio Prot		c0.14	c0.35		0.06		c0.30	0.26			c0.13	
v/s Ratio Perm												
v/c Ratio		0.79	0.67		0.34		0.52	0.44			0.79	
Uniform Delay, d1		58.8	27.0		53.6		19.6	18.5			60.8	
Progression Factor		1.00	1.00		1.00		0.02	0.01			1.00	
Incremental Delay, d2		12.3	2.2		0.3		1.5	1.0			7.8	
Delay (s)		71.2	29.3		53.9		1.9	1.3			68.6	
Level of Service		E	C		D		A	A			E	
Approach Delay (s/veh)		43.0			53.9			1.6			68.6	
Approach LOS		D			D			A			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	579	0	341	10	602	251	27
Future Volume (vph)	0	0	0	0	0	579	0	341	10	602	251	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.5		4.5			4.5	
Lane Util. Factor						0.88		0.95			0.95	
Frpb, ped/bikes						1.00		0.99			1.00	
Flpb, ped/bikes						1.00		1.00			1.00	
Frt						0.85		0.99			0.99	
Flt Protected						1.00		1.00			0.96	
Satd. Flow (prot)						2787		3523			3407	
Flt Permitted						1.00		1.00			0.96	
Satd. Flow (perm)						2787		3523			3407	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	629	0	371	11	654	273	29
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	0	629	0	380	0	0	954	0
Confl. Peds. (#/hr)									1			
Turn Type						Prot		NA		Split	NA	
Protected Phases						3		2		1 3	1 3	
Permitted Phases												
Actuated Green, G (s)						50.2		31.0			110.0	
Effective Green, g (s)						50.2		31.0			110.0	
Actuated g/C Ratio						0.33		0.21			0.73	
Clearance Time (s)						4.5		4.5				
Vehicle Extension (s)						3.0		3.0				
Lane Grp Cap (vph)						932		728			2498	
v/s Ratio Prot						c0.23		c0.11			c0.28	
v/s Ratio Perm												
v/c Ratio						0.67		0.52			0.38	
Uniform Delay, d1						42.8		52.9			7.4	
Progression Factor						1.00		1.00			0.04	
Incremental Delay, d2						3.9		2.6			0.0	
Delay (s)						46.7		55.5			0.4	
Level of Service						D		E			A	
Approach Delay (s/veh)		0.0			46.7			55.5			0.4	
Approach LOS		A			D			E			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	2	10	2	1	10	15	339	0	11	243	3
Future Vol, veh/h	17	2	10	2	1	10	15	339	0	11	243	3
Conflicting Peds, #/hr	0	0	2	0	0	0	0	0	9	0	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	2	11	2	1	11	16	368	0	12	264	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	699	708	276	701	709	377	275	0	0	377	0	0
Stage 1	298	298	-	410	410	-	-	-	-	-	-	-
Stage 2	402	410	-	291	299	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	354	360	763	353	359	669	1288	-	-	1181	-	-
Stage 1	711	667	-	619	595	-	-	-	-	-	-	-
Stage 2	625	595	-	717	666	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	337	346	756	335	345	663	1278	-	-	1171	-	-
Mov Cap-2 Maneuver	337	346	-	335	345	-	-	-	-	-	-	-
Stage 1	698	655	-	605	583	-	-	-	-	-	-	-
Stage 2	606	583	-	696	654	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	14.33	11.81	0.33	0.35
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	417	543	1171	-	-
HCM Lane V/C Ratio	0.013	-	-	0.076	0.026	0.01	-	-
HCM Control Delay (s/veh)	7.9	-	-	14.3	11.8	8.1	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	100	64	288	109	46	210
Future Vol, veh/h	100	64	288	109	46	210
Conflicting Peds, #/hr	1	0	0	6	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	70	313	118	50	228

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	708	378	0	0	438	0
Stage 1	378	-	-	-	-	-
Stage 2	329	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	401	668	-	-	1122	-
Stage 1	693	-	-	-	-	-
Stage 2	729	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	381	665	-	-	1116	-
Mov Cap-2 Maneuver	381	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	15.4	0	1.51
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	381	665	1116	-
HCM Lane V/C Ratio	-	-	0.285	0.105	0.045	-
HCM Control Delay (s/veh)	-	-	18.2	11	8.4	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.3	0.1	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	107	28	64	49	20	88
Future Vol, veh/h	107	28	64	49	20	88
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	116	30	70	53	22	96
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	8.5	7.8	7.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	79%	0%	19%
Vol Thru, %	21%	57%	0%
Vol Right, %	0%	43%	81%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	135	113	108
LT Vol	107	0	20
Through Vol	28	64	0
RT Vol	0	49	88
Lane Flow Rate	147	123	117
Geometry Grp	1	1	1
Degree of Util (X)	0.179	0.14	0.133
Departure Headway (Hd)	4.394	4.094	4.079
Convergence, Y/N	Yes	Yes	Yes
Cap	806	881	883
Service Time	2.48	2.094	2.086
HCM Lane V/C Ratio	0.182	0.14	0.133
HCM Control Delay, s/veh	8.5	7.8	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.5	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	854	56	113	681	0	31	0	143	0	0	2
Future Volume (veh/h)	3	854	56	113	681	0	31	0	143	0	0	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	928	61	123	740	0	34	0	155	0	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	7	1363	90	158	1731	0	258	0	230	0	0	3
Arrive On Green	0.00	0.40	0.40	0.09	0.49	0.00	0.15	0.00	0.15	0.00	0.00	0.00
Sat Flow, veh/h	1781	3384	222	1781	3647	0	1781	0	1582	0	0	1585
Grp Volume(v), veh/h	3	487	502	123	740	0	34	0	155	0	0	2
Grp Sat Flow(s),veh/h/ln	1781	1777	1830	1781	1777	0	1781	0	1582	0	0	1585
Q Serve(g_s), s	0.1	11.2	11.2	3.4	6.7	0.0	0.8	0.0	4.6	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.1	11.2	11.2	3.4	6.7	0.0	0.8	0.0	4.6	0.0	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.00	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	7	715	737	158	1731	0	258	0	230	0	0	3
V/C Ratio(X)	0.41	0.68	0.68	0.78	0.43	0.00	0.13	0.00	0.68	0.00	0.00	0.63
Avail Cap(c_a), veh/h	179	1198	1234	233	2504	0	1058	0	939	0	0	80
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	24.7	12.2	12.2	22.2	8.3	0.0	18.5	0.0	20.1	0.0	0.0	24.8
Incr Delay (d2), s/veh	33.4	1.2	1.1	9.5	0.2	0.0	0.2	0.0	3.4	0.0	0.0	119.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.8	3.9	1.7	2.0	0.0	0.3	0.0	1.7	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.0	13.4	13.3	31.7	8.4	0.0	18.7	0.0	23.6	0.0	0.0	144.4
LnGrp LOS	E	B	B	C	A		B		C			F
Approach Vol, veh/h		992			863			189			2	
Approach Delay, s/veh		13.5			11.7			22.7			144.4	
Approach LOS		B			B			C			F	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	11.7	8.9	24.5	4.6	4.7	28.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	6.5	33.5	2.5	5.0	35.0
Max Q Clear Time (g_c+I1), s	6.6	5.4	13.2	2.1	2.1	8.7
Green Ext Time (p_c), s	1.0	0.0	6.6	0.0	0.0	5.6

Intersection Summary	
HCM 7th Control Delay, s/veh	13.7
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	135	150	1	1	15
Future Vol, veh/h	19	135	150	1	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	147	163	1	1	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	164	0	-	0	352	164
Stage 1	-	-	-	-	164	-
Stage 2	-	-	-	-	188	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1414	-	-	-	646	881
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	844	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1414	-	-	-	636	881
Mov Cap-2 Maneuver	-	-	-	-	636	-
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	844	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.94	0	9.27
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	222	-	-	-	860
HCM Lane V/C Ratio	0.015	-	-	-	0.02
HCM Control Delay (s/veh)	7.6	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	1	4	152	106	14
Future Vol, veh/h	13	1	4	152	106	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	1	4	165	115	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	297	123	130	0	-	0
Stage 1	123	-	-	-	-	-
Stage 2	174	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	694	928	1455	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	856	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	692	928	1455	-	-	-
Mov Cap-2 Maneuver	692	-	-	-	-	-
Stage 1	900	-	-	-	-	-
Stage 2	856	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.22	0.19	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	46	-	705	-	-
HCM Lane V/C Ratio	0.003	-	0.022	-	-
HCM Control Delay (s/veh)	7.5	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	211	387	0	222	8	550	391	56	16	245	13
Future Volume (vph)	0	211	387	0	222	8	550	391	56	16	245	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00			0.95	
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.99		1.00	0.98			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1863	1583		3516		1770	1822			3502	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			1.00	
Satd. Flow (perm)		1863	1583		3516		1770	1822			3502	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	229	421	0	241	9	598	425	61	17	266	14
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	3	0
Lane Group Flow (vph)	0	229	421	0	250	0	598	483	0	0	294	0
Confl. Peds. (#/hr)			1			4			2			2
Turn Type		NA	custom		NA		Split	NA		Split	NA	
Protected Phases		8	8 3		8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)		17.3	55.1		17.3		73.8	73.8			15.4	
Effective Green, g (s)		17.3	55.1		17.3		73.8	73.8			15.4	
Actuated g/C Ratio		0.14	0.46		0.14		0.62	0.62			0.13	
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		268	726		506		1088	1120			449	
v/s Ratio Prot		c0.12	c0.27		0.07		c0.34	0.26			c0.08	
v/s Ratio Perm												
v/c Ratio		0.85	0.58		0.49		0.55	0.43			0.65	
Uniform Delay, d1		50.1	23.9		47.3		13.4	12.1			49.8	
Progression Factor		1.00	1.00		1.00		0.05	0.02			1.00	
Incremental Delay, d2		22.3	1.1		0.8		1.6	1.0			3.4	
Delay (s)		72.5	25.0		48.1		2.2	1.2			53.2	
Level of Service		E	C		D		A	A			D	
Approach Delay (s/veh)		41.8			48.1			1.7			53.2	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	550	0	447	2	451	171	10
Future Volume (vph)	0	0	0	0	0	550	0	447	2	451	171	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.5		4.5			4.5	
Lane Util. Factor						0.88		0.95			0.95	
Frt						0.85		1.00			1.00	
Flt Protected						1.00		1.00			0.97	
Satd. Flow (prot)						2787		3537			3409	
Flt Permitted						1.00		1.00			0.97	
Satd. Flow (perm)						2787		3537			3409	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	598	0	486	2	490	186	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	0	598	0	488	0	0	686	0
Turn Type						Prot		NA		Split	NA	
Protected Phases						3		2		1 3	1 3	
Permitted Phases												
Actuated Green, G (s)						37.8		31.5			79.5	
Effective Green, g (s)						37.8		31.5			79.5	
Actuated g/C Ratio						0.32		0.26			0.66	
Clearance Time (s)						4.5		4.5				
Vehicle Extension (s)						3.0		3.0				
Lane Grp Cap (vph)						877		928			2258	
v/s Ratio Prot						c0.21		c0.14			c0.20	
v/s Ratio Perm												
v/c Ratio						0.68		0.53			0.30	
Uniform Delay, d1						35.9		37.9			8.6	
Progression Factor						1.00		1.00			0.05	
Incremental Delay, d2						4.3		2.1			0.1	
Delay (s)						40.1		40.0			0.5	
Level of Service						D		D			A	
Approach Delay (s/veh)		0.0			40.1			40.0			0.5	
Approach LOS		A			D			D			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	0	31	0	0	0	10	449	0	0	180	4
Future Vol, veh/h	7	0	31	0	0	0	10	449	0	0	180	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	34	0	0	0	11	488	0	0	196	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	708	708	198	705	710	488	200	0	0	488	0	0
Stage 1	198	198	-	510	510	-	-	-	-	-	-	-
Stage 2	510	510	-	196	200	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	350	360	843	351	359	580	1372	-	-	1075	-	-
Stage 1	804	737	-	546	538	-	-	-	-	-	-	-
Stage 2	546	538	-	806	736	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	347	357	843	334	356	580	1372	-	-	1075	-	-
Mov Cap-2 Maneuver	347	357	-	334	356	-	-	-	-	-	-	-
Stage 1	804	737	-	542	533	-	-	-	-	-	-	-
Stage 2	542	533	-	774	736	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	10.75	0	0.17	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1372	-	-	667	-	1075	-	-
HCM Lane V/C Ratio	0.008	-	-	0.062	-	-	-	-
HCM Control Delay (s/veh)	7.6	-	-	10.7	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	-	0	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	86	57	401	90	67	142
Future Vol, veh/h	86	57	401	90	67	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	62	436	98	73	154

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	785	485	0	0	534	0
Stage 1	485	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	362	582	-	-	1034	-
Stage 1	619	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	336	582	-	-	1034	-
Mov Cap-2 Maneuver	336	-	-	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	16.65	0	2.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	336	582	1034	-
HCM Lane V/C Ratio	-	-	0.278	0.106	0.07	-
HCM Control Delay (s/veh)	-	-	19.8	11.9	8.7	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0.4	0.2	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	98	63	29	10	21	85
Future Vol, veh/h	98	63	29	10	21	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	68	32	11	23	92
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	8.5	7.4	7.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	61%	0%	20%
Vol Thru, %	39%	74%	0%
Vol Right, %	0%	26%	80%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	161	39	106
LT Vol	98	0	21
Through Vol	63	29	0
RT Vol	0	10	85
Lane Flow Rate	175	42	115
Geometry Grp	1	1	1
Degree of Util (X)	0.209	0.048	0.128
Departure Headway (Hd)	4.291	4.118	3.986
Convergence, Y/N	Yes	Yes	Yes
Cap	830	854	904
Service Time	2.351	2.217	1.986
HCM Lane V/C Ratio	0.211	0.049	0.127
HCM Control Delay, s/veh	8.5	7.4	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.8	0.2	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	564	30	107	916	0	43	0	148	0	0	0
Future Volume (veh/h)	1	564	30	107	916	0	43	0	148	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	613	33	116	996	0	47	0	161	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	2123	114	99	2393	0	312	0	268	0	2	0
Arrive On Green	0.00	0.62	0.62	0.06	0.67	0.00	0.18	0.00	0.18	0.00	0.00	0.00
Sat Flow, veh/h	1781	3429	184	1781	3647	0	1781	0	1528	0	1870	0
Grp Volume(v), veh/h	1	317	329	116	996	0	47	0	161	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1837	1781	1777	0	1781	0	1528	0	1870	0
Q Serve(g_s), s	0.1	7.5	7.5	5.0	11.4	0.0	2.0	0.0	8.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	7.5	7.5	5.0	11.4	0.0	2.0	0.0	8.7	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	2	1100	1137	99	2393	0	312	0	268	0	2	0
V/C Ratio(X)	0.41	0.29	0.29	1.17	0.42	0.00	0.15	0.00	0.60	0.00	0.00	0.00
Avail Cap(c_a), veh/h	99	1100	1137	99	2393	0	584	0	501	0	52	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	44.9	7.9	7.9	42.5	6.7	0.0	31.4	0.0	34.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	83.8	0.7	0.6	144.1	0.5	0.0	0.2	0.0	2.2	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.8	2.9	6.1	3.8	0.0	0.9	0.0	3.4	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	128.7	8.6	8.6	186.6	7.2	0.0	31.7	0.0	36.4	0.0	0.0	0.0
LnGrp LOS	F	A	A	F	A		C		D			
Approach Vol, veh/h		647			1112			208			0	
Approach Delay, s/veh		8.8			25.9			35.3			0.0	
Approach LOS		A			C			D				

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		20.3	9.5	60.2		0.0	4.6	65.1
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		29.5	5.0	35.0		2.5	5.0	35.0
Max Q Clear Time (g_c+I1), s		10.7	7.0	9.5		0.0	2.1	13.4
Green Ext Time (p_c), s		1.0	0.0	4.2		0.0	0.0	7.5

Intersection Summary	
HCM 7th Control Delay, s/veh	21.3
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	145	111	3	11	25
Future Vol, veh/h	12	145	111	3	11	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	158	121	3	12	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	124	0	-	0	306	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	184	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1463	-	-	-	686	929
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	848	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1463	-	-	-	679	929
Mov Cap-2 Maneuver	-	-	-	-	679	-
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	848	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.57	0	9.52
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	138	-	-	-	835
HCM Lane V/C Ratio	0.009	-	-	-	0.047
HCM Control Delay (s/veh)	7.5	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	1	109	105	1
Future Vol, veh/h	1	1	1	109	105	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	1	118	114	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	235	115	115	0	-	0
Stage 1	115	-	-	-	-	-
Stage 2	121	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	753	938	1474	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	905	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	752	938	1474	-	-	-
Mov Cap-2 Maneuver	752	-	-	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	905	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.32	0.07	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	16	-	835	-	-
HCM Lane V/C Ratio	0.001	-	0.003	-	-
HCM Control Delay (s/veh)	7.4	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	247	519	0	182	17	489	400	34	17	375	19
Future Volume (vph)	0	247	519	0	182	17	489	400	34	17	375	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00			0.95	
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.99		1.00	0.99			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1863	1583		3495		1770	1837			3504	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			1.00	
Satd. Flow (perm)		1863	1583		3495		1770	1837			3504	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	268	564	0	198	18	532	435	37	18	408	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	268	564	0	216	0	532	470	0	0	444	0
Confl. Peds. (#/hr)			5						2			3
Turn Type		NA	custom		NA		Split	NA		Split	NA	
Protected Phases		8	8 3		8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)		27.5	77.3		27.5		85.3	85.3			23.7	
Effective Green, g (s)		27.5	77.3		27.5		85.3	85.3			23.7	
Actuated g/C Ratio		0.18	0.52		0.18		0.57	0.57			0.16	
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		341	815		640		1006	1044			553	
v/s Ratio Prot		c0.14	c0.36		0.06		c0.30	0.26			c0.13	
v/s Ratio Perm												
v/c Ratio		0.79	0.69		0.34		0.53	0.45			0.80	
Uniform Delay, d1		58.4	27.4		53.3		20.0	18.8			60.9	
Progression Factor		1.00	1.00		1.00		0.02	0.01			1.00	
Incremental Delay, d2		11.3	2.6		0.3		1.6	1.1			8.3	
Delay (s)		69.7	29.9		53.6		2.0	1.4			69.2	
Level of Service		E	C		D		A	A			E	
Approach Delay (s/veh)		42.8			53.6			1.7			69.2	
Approach LOS		D			D			A			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	579	0	344	10	603	264	27
Future Volume (vph)	0	0	0	0	0	579	0	344	10	603	264	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.5		4.5			4.5	
Lane Util. Factor						0.88		0.95			0.95	
Frpb, ped/bikes						1.00		1.00			1.00	
Flpb, ped/bikes						1.00		1.00			1.00	
Frt						0.85		1.00			1.00	
Flt Protected						1.00		1.00			0.97	
Satd. Flow (prot)						2787		3523			3408	
Flt Permitted						1.00		1.00			0.97	
Satd. Flow (perm)						2787		3523			3408	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	629	0	374	11	655	287	29
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	0	629	0	383	0	0	970	0
Confl. Peds. (#/hr)									1			
Turn Type						Prot		NA		Split	NA	
Protected Phases						3		2		1 3	1 3	
Permitted Phases												
Actuated Green, G (s)						49.8		31.0			110.0	
Effective Green, g (s)						49.8		31.0			110.0	
Actuated g/C Ratio						0.33		0.21			0.73	
Clearance Time (s)						4.5		4.5				
Vehicle Extension (s)						3.0		3.0				
Lane Grp Cap (vph)						925		728			2499	
v/s Ratio Prot						c0.23		c0.11			c0.28	
v/s Ratio Perm												
v/c Ratio						0.68		0.53			0.39	
Uniform Delay, d1						43.2		53.0			7.5	
Progression Factor						1.00		1.00			0.05	
Incremental Delay, d2						4.0		2.7			0.1	
Delay (s)						47.2		55.7			0.4	
Level of Service						D		E			A	
Approach Delay (s/veh)		0.0			47.2			55.7			0.4	
Approach LOS		A			D			E			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	0	14	0	0	0	15	345	0	0	258	3
Future Vol, veh/h	17	0	14	0	0	0	15	345	0	0	258	3
Conflicting Peds, #/hr	0	0	2	0	0	0	0	0	9	0	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	0	15	0	0	0	16	375	0	0	280	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	698	707	292	699	708	384	292	0	0	384	0	0
Stage 1	290	290	-	417	417	-	-	-	-	-	-	-
Stage 2	408	417	-	282	292	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	355	360	747	354	359	664	1270	-	-	1174	-	-
Stage 1	718	672	-	614	591	-	-	-	-	-	-	-
Stage 2	620	591	-	725	671	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	348	350	740	339	349	658	1260	-	-	1164	-	-
Mov Cap-2 Maneuver	348	350	-	339	349	-	-	-	-	-	-	-
Stage 1	712	667	-	600	579	-	-	-	-	-	-	-
Stage 2	612	579	-	708	666	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	13.5	0	0.33	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1260	-	-	457	-	1164	-	-
HCM Lane V/C Ratio	0.013	-	-	0.074	-	-	-	-
HCM Control Delay (s/veh)	7.9	-	-	13.5	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	-	0	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	97	70	288	96	65	210
Future Vol, veh/h	97	70	288	96	65	210
Conflicting Peds, #/hr	1	0	0	6	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	105	76	313	104	71	228

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	742	371	0	0	423	0
Stage 1	371	-	-	-	-	-
Stage 2	371	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	383	675	-	-	1136	-
Stage 1	698	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	357	671	-	-	1129	-
Mov Cap-2 Maneuver	357	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	654	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	15.82	0	1.99
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	357	671	1129	-
HCM Lane V/C Ratio	-	-	0.295	0.113	0.063	-
HCM Control Delay (s/veh)	-	-	19.3	11.1	8.4	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.4	0.2	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	113	28	64	49	20	94
Future Vol, veh/h	113	28	64	49	20	94
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	30	70	53	22	102
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	8.5	7.8	7.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	80%	0%	18%
Vol Thru, %	20%	57%	0%
Vol Right, %	0%	43%	82%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	141	113	114
LT Vol	113	0	20
Through Vol	28	64	0
RT Vol	0	49	94
Lane Flow Rate	153	123	124
Geometry Grp	1	1	1
Degree of Util (X)	0.188	0.141	0.141
Departure Headway (Hd)	4.408	4.119	4.089
Convergence, Y/N	Yes	Yes	Yes
Cap	803	876	881
Service Time	2.499	2.119	2.097
HCM Lane V/C Ratio	0.191	0.14	0.141
HCM Control Delay, s/veh	8.5	7.8	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.5	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	855	54	109	681	0	25	0	145	0	0	2
Future Volume (veh/h)	3	855	54	109	681	0	25	0	145	0	0	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	929	59	118	740	0	27	0	158	0	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	7	1370	87	151	1723	0	260	0	231	0	0	3
Arrive On Green	0.00	0.40	0.40	0.09	0.48	0.00	0.15	0.00	0.15	0.00	0.00	0.00
Sat Flow, veh/h	1781	3393	215	1781	3647	0	1781	0	1582	0	0	1585
Grp Volume(v), veh/h	3	487	501	118	740	0	27	0	158	0	0	2
Grp Sat Flow(s),veh/h/ln	1781	1777	1831	1781	1777	0	1781	0	1582	0	0	1585
Q Serve(g_s), s	0.1	11.1	11.1	3.2	6.7	0.0	0.7	0.0	4.7	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.1	11.1	11.1	3.2	6.7	0.0	0.7	0.0	4.7	0.0	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.00	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	7	718	740	151	1723	0	260	0	231	0	0	3
V/C Ratio(X)	0.41	0.68	0.68	0.78	0.43	0.00	0.10	0.00	0.68	0.00	0.00	0.62
Avail Cap(c_a), veh/h	180	1202	1239	234	2512	0	1061	0	942	0	0	80
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	24.6	12.1	12.1	22.2	8.3	0.0	18.3	0.0	20.1	0.0	0.0	24.7
Incr Delay (d2), s/veh	33.4	1.1	1.1	8.6	0.2	0.0	0.2	0.0	3.5	0.0	0.0	118.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.8	3.9	1.6	2.0	0.0	0.3	0.0	1.8	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.0	13.2	13.2	30.8	8.5	0.0	18.5	0.0	23.6	0.0	0.0	143.5
LnGrp LOS	E	B	B	C	A		B		C			F
Approach Vol, veh/h		991			858			185			2	
Approach Delay, s/veh		13.4			11.5			22.8			143.5	
Approach LOS		B			B			C			F	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	11.7	8.7	24.5	4.6	4.7	28.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	6.5	33.5	2.5	5.0	35.0
Max Q Clear Time (g_c+I1), s	6.7	5.2	13.1	2.1	2.1	8.7
Green Ext Time (p_c), s	1.0	0.0	6.6	0.0	0.0	5.6

Intersection Summary	
HCM 7th Control Delay, s/veh	13.6
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	133	150	6	8	18
Future Vol, veh/h	27	133	150	6	8	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	145	163	7	9	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	170	0	-	0	370	166
Stage 1	-	-	-	-	166	-
Stage 2	-	-	-	-	203	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1408	-	-	-	631	878
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	831	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1408	-	-	-	616	878
Mov Cap-2 Maneuver	-	-	-	-	616	-
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	831	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.28	0	9.81
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	304	-	-	-	777
HCM Lane V/C Ratio	0.021	-	-	-	0.036
HCM Control Delay (s/veh)	7.6	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	2	160	111	3
Future Vol, veh/h	1	1	2	160	111	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	2	174	121	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	301	122	124	0	-	0
Stage 1	122	-	-	-	-	-
Stage 2	178	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	691	929	1463	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	853	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	690	929	1463	-	-	-
Mov Cap-2 Maneuver	690	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	853	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.56	0.09	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	22	-	792	-	-
HCM Lane V/C Ratio	0.001	-	0.003	-	-
HCM Control Delay (s/veh)	7.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	285	516	0	301	11	736	526	74	21	328	17
Future Volume (vph)	0	285	516	0	301	11	736	526	74	21	328	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00			0.95	
Frpb, ped/bikes		1.00	1.00		0.99		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.99		1.00	0.98			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (prot)		1863	1583		3516		1770	1823			3503	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (perm)		1863	1583		3516		1770	1823			3503	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	310	561	0	327	12	800	572	80	23	357	18
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	3	0
Lane Group Flow (vph)	0	310	561	0	339	0	800	649	0	0	395	0
Confl. Peds. (#/hr)			1			4			2			2
Turn Type		NA	custom		NA		Split	NA		Split	NA	
Protected Phases		8	8 3		8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)		23.5	69.8		23.5		81.8	81.8			21.2	
Effective Green, g (s)		23.5	69.8		23.5		81.8	81.8			21.2	
Actuated g/C Ratio		0.17	0.50		0.17		0.58	0.58			0.15	
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		312	789		590		1034	1065			530	
v/s Ratio Prot		c0.17	0.35		0.10		c0.45	0.36			c0.11	
v/s Ratio Perm												
v/c Ratio		0.99	0.71		0.57		0.77	0.60			0.74	
Uniform Delay, d1		58.1	27.2		53.6		22.0	18.7			56.8	
Progression Factor		1.00	1.00		1.00		0.11	0.03			1.00	
Incremental Delay, d2		48.9	3.0		1.3		2.8	1.2			5.6	
Delay (s)		107.1	30.3		55.0		5.2	1.8			62.4	
Level of Service		F	C		E		A	A			E	
Approach Delay (s/veh)		57.6			55.0			3.7			62.4	
Approach LOS		E			E			A			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	743	0	593	3	608	221	14
Future Volume (vph)	0	0	0	0	0	743	0	593	3	608	221	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.5		4.5			4.5	
Lane Util. Factor						0.88		0.95			0.95	
Frt						0.85		0.99			0.99	
Flt Protected						1.00		1.00			0.96	
Satd. Flow (prot)						2787		3537			3408	
Flt Permitted						1.00		1.00			0.96	
Satd. Flow (perm)						2787		3537			3408	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	808	0	645	3	661	240	15
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	0	808	0	648	0	0	915	0
Turn Type						Prot		NA		Split	NA	
Protected Phases						3		2		1 3	1 3	
Permitted Phases												
Actuated Green, G (s)						46.3		31.0			100.0	
Effective Green, g (s)						46.3		31.0			100.0	
Actuated g/C Ratio						0.33		0.22			0.71	
Clearance Time (s)						4.5		4.5				
Vehicle Extension (s)						3.0		3.0				
Lane Grp Cap (vph)						921		783			2434	
v/s Ratio Prot						c0.29		c0.18			c0.27	
v/s Ratio Perm												
v/c Ratio						0.87		0.82			0.37	
Uniform Delay, d1						44.1		51.9			7.8	
Progression Factor						1.00		1.00			0.05	
Incremental Delay, d2						11.5		9.7			0.0	
Delay (s)						55.7		61.7			0.4	
Level of Service						E		E			A	
Approach Delay (s/veh)		0.0			55.7			61.7			0.4	
Approach LOS		A			E			E			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	3	40	0	1	11	14	584	1	3	234	6
Future Vol, veh/h	10	3	40	0	1	11	14	584	1	3	234	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	3	43	0	1	12	15	635	1	3	254	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	930	930	258	928	933	635	261	0	0	636	0	0
Stage 1	264	264	-	666	666	-	-	-	-	-	-	-
Stage 2	666	666	-	263	267	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	248	267	781	248	266	478	1304	-	-	948	-	-
Stage 1	741	690	-	449	457	-	-	-	-	-	-	-
Stage 2	449	457	-	743	688	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	237	263	781	228	262	478	1304	-	-	948	-	-
Mov Cap-2 Maneuver	237	263	-	228	262	-	-	-	-	-	-	-
Stage 1	738	688	-	444	452	-	-	-	-	-	-	-
Stage 2	431	452	-	695	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	13.04	13.29	0.18	0.11
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1304	-	-	505	447	948	-	-
HCM Lane V/C Ratio	0.012	-	-	0.114	0.029	0.003	-	-
HCM Control Delay (s/veh)	7.8	-	-	13	13.3	8.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	105	54	543	129	78	191
Future Vol, veh/h	105	54	543	129	78	191
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	59	590	140	85	208

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1038	660	0	0	730	0
Stage 1	660	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	256	463	-	-	874	-
Stage 1	514	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	231	463	-	-	874	-
Mov Cap-2 Maneuver	231	-	-	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	626	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	27.75	0	2.77
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	231	463	874	-
HCM Lane V/C Ratio	-	-	0.494	0.127	0.097	-
HCM Control Delay (s/veh)	-	-	34.9	13.9	9.6	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	2.5	0.4	0.3	-

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	121	85	40	14	28	118
Future Vol, veh/h	121	85	40	14	28	118
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	92	43	15	30	128
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	9.1	7.7	8.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	59%	0%	19%
Vol Thru, %	41%	74%	0%
Vol Right, %	0%	26%	81%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	206	54	146
LT Vol	121	0	28
Through Vol	85	40	0
RT Vol	0	14	118
Lane Flow Rate	224	59	159
Geometry Grp	1	1	1
Degree of Util (X)	0.272	0.071	0.182
Departure Headway (Hd)	4.376	4.37	4.138
Convergence, Y/N	Yes	Yes	Yes
Cap	808	822	871
Service Time	2.476	2.384	2.142
HCM Lane V/C Ratio	0.277	0.072	0.183
HCM Control Delay, s/veh	9.1	7.7	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.1	0.2	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	761	44	150	1238	0	64	0	189	0	0	0
Future Volume (veh/h)	1	761	44	150	1238	0	64	0	189	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	827	48	163	1346	0	70	0	205	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	1977	115	129	2311	0	353	0	305	0	2	0
Arrive On Green	0.00	0.58	0.58	0.07	0.65	0.00	0.20	0.00	0.20	0.00	0.00	0.00
Sat Flow, veh/h	1781	3413	198	1781	3647	0	1781	0	1535	0	1870	0
Grp Volume(v), veh/h	1	430	445	163	1346	0	70	0	205	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1834	1781	1777	0	1781	0	1535	0	1870	0
Q Serve(g_s), s	0.1	12.1	12.1	6.5	19.2	0.0	3.0	0.0	11.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	12.1	12.1	6.5	19.2	0.0	3.0	0.0	11.1	0.0	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	2	1029	1063	129	2311	0	353	0	305	0	2	0
V/C Ratio(X)	0.41	0.42	0.42	1.27	0.58	0.00	0.20	0.00	0.67	0.00	0.00	0.00
Avail Cap(c_a), veh/h	99	1029	1063	129	2311	0	584	0	503	0	52	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	44.9	10.5	10.5	41.7	8.9	0.0	30.1	0.0	33.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	83.8	1.3	1.2	167.7	1.1	0.0	0.3	0.0	2.6	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.7	4.8	8.8	6.7	0.0	1.3	0.0	4.3	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	128.7	11.8	11.7	209.5	9.9	0.0	30.4	0.0	36.0	0.0	0.0	0.0
LnGrp LOS	F	B	B	F	A		C		D			
Approach Vol, veh/h		876			1509			275			0	
Approach Delay, s/veh		11.9			31.5			34.5			0.0	
Approach LOS		B			C			C				

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	22.4	11.0	56.6	0.0	4.6	63.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	6.5	33.5	2.5	5.0	35.0
Max Q Clear Time (g_c+I1), s	13.1	8.5	14.1	0.0	2.1	21.2
Green Ext Time (p_c), s	1.3	0.0	5.6	0.0	0.0	8.2

Intersection Summary	
HCM 7th Control Delay, s/veh	25.3
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	197	152	4	0	0
Future Vol, veh/h	7	197	152	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	214	165	4	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	170	0	-	0	397	167
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	229	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1408	-	-	-	608	877
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	809	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1408	-	-	-	605	877
Mov Cap-2 Maneuver	-	-	-	-	605	-
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	809	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.26	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	62	-	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s/veh)	7.6	0	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	2	2	132	143	5
Future Vol, veh/h	5	2	2	132	143	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	2	2	143	155	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	306	158	161	0	-	0
Stage 1	158	-	-	-	-	-
Stage 2	148	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	686	887	1418	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	685	887	1418	-	-	-
Mov Cap-2 Maneuver	685	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	880	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.97	0.11	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	27	-	733	-	-
HCM Lane V/C Ratio	0.002	-	0.01	-	-
HCM Control Delay (s/veh)	7.5	0	10	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	320	660	0	237	22	629	522	43	22	483	24
Future Volume (vph)	0	320	660	0	237	22	629	522	43	22	483	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00			0.95	
Frpb, ped/bikes		1.00	1.00		1.00		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.98		1.00	0.98			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (prot)		1863	1583		3494		1770	1838			3505	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (perm)		1863	1583		3494		1770	1838			3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	348	717	0	258	24	684	567	47	24	525	26
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	348	717	0	282	0	684	612	0	0	573	0
Confl. Peds. (#/hr)			5						2			3
Turn Type		NA	custom		NA		Split	NA		Split	NA	
Protected Phases		8	8 3		8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)		28.7	74.5		28.7		81.3	81.3			26.5	
Effective Green, g (s)		28.7	74.5		28.7		81.3	81.3			26.5	
Actuated g/C Ratio		0.19	0.50		0.19		0.54	0.54			0.18	
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		356	786		668		959	996			619	
v/s Ratio Prot		c0.19	c0.45		0.08		c0.39	0.33			c0.16	
v/s Ratio Perm												
v/c Ratio		0.97	0.91		0.42		0.71	0.61			0.92	
Uniform Delay, d1		60.3	34.7		53.3		25.6	23.5			60.7	
Progression Factor		1.00	1.00		1.00		0.01	0.01			1.00	
Incremental Delay, d2		41.2	14.8		0.4		2.2	1.3			19.7	
Delay (s)		101.5	49.5		53.7		2.7	1.6			80.4	
Level of Service		F	D		D		A	A			F	
Approach Delay (s/veh)		66.5			53.7			2.2			80.4	
Approach LOS		E			D			A			F	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	42.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	752	0	442	14	781	326	35
Future Volume (vph)	0	0	0	0	0	752	0	442	14	781	326	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.5		4.5			4.5	
Lane Util. Factor						0.88		0.95			0.95	
Frpb, ped/bikes						1.00		0.99			1.00	
Flpb, ped/bikes						1.00		1.00			1.00	
Frt						0.85		0.99			0.99	
Flt Protected						1.00		1.00			0.96	
Satd. Flow (prot)						2787		3522			3406	
Flt Permitted						1.00		1.00			0.96	
Satd. Flow (perm)						2787		3522			3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	817	0	480	15	849	354	38
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	0	817	0	493	0	0	1239	0
Confl. Peds. (#/hr)									1			
Turn Type						Prot		NA		Split	NA	
Protected Phases						3		2		1 3	1 3	
Permitted Phases												
Actuated Green, G (s)						45.8		31.0			110.0	
Effective Green, g (s)						45.8		31.0			110.0	
Actuated g/C Ratio						0.31		0.21			0.73	
Clearance Time (s)						4.5		4.5				
Vehicle Extension (s)						3.0		3.0				
Lane Grp Cap (vph)						850		727			2497	
v/s Ratio Prot						c0.29		c0.14			c0.36	
v/s Ratio Perm												
v/c Ratio						0.96		0.67			0.49	
Uniform Delay, d1						51.2		54.9			8.3	
Progression Factor						1.00		1.00			0.06	
Incremental Delay, d2						22.7		5.0			0.0	
Delay (s)						73.9		59.9			0.5	
Level of Service						E		E			A	
Approach Delay (s/veh)		0.0			73.9			59.9			0.5	
Approach LOS		A			E			E			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	2	14	2	1	10	19	439	0	11	315	4
Future Vol, veh/h	22	2	14	2	1	10	19	439	0	11	315	4
Conflicting Peds, #/hr	0	0	2	0	0	0	0	0	9	0	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	2	15	2	1	11	21	477	0	12	342	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	896	904	355	897	906	486	355	0	0	486	0	0
Stage 1	376	376	-	527	527	-	-	-	-	-	-	-
Stage 2	519	527	-	369	379	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	261	277	689	261	276	581	1204	-	-	1077	-	-
Stage 1	645	616	-	534	528	-	-	-	-	-	-	-
Stage 2	540	528	-	651	615	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	246	265	683	243	264	576	1195	-	-	1068	-	-
Mov Cap-2 Maneuver	246	265	-	243	264	-	-	-	-	-	-	-
Stage 1	633	605	-	520	514	-	-	-	-	-	-	-
Stage 2	519	514	-	626	603	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	17.75	13.4	0.33	0.28
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1195	-	-	324	443	1068	-	-
HCM Lane V/C Ratio	0.017	-	-	0.128	0.032	0.011	-	-
HCM Control Delay (s/veh)	8.1	-	-	17.7	13.4	8.4	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	130	82	373	142	59	273
Future Vol, veh/h	130	82	373	142	59	273
Conflicting Peds, #/hr	1	0	0	6	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	89	405	154	64	297

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	915	489	0	0	566	0
Stage 1	489	-	-	-	-	-
Stage 2	426	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	303	579	-	-	1006	-
Stage 1	617	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	282	576	-	-	1000	-
Mov Cap-2 Maneuver	282	-	-	-	-	-
Stage 1	613	-	-	-	-	-
Stage 2	616	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	23.18	0	1.57
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	282	576	1000	-
HCM Lane V/C Ratio	-	-	0.502	0.155	0.064	-
HCM Control Delay (s/veh)	-	-	30	12.4	8.8	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	2.6	0.5	0.2	-

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	139	37	82	64	26	114
Future Vol, veh/h	139	37	82	64	26	114
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	151	40	89	70	28	124
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	9.1	8.2	8.2
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	79%	0%	19%
Vol Thru, %	21%	56%	0%
Vol Right, %	0%	44%	81%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	176	146	140
LT Vol	139	0	26
Through Vol	37	82	0
RT Vol	0	64	114
Lane Flow Rate	191	159	152
Geometry Grp	1	1	1
Degree of Util (X)	0.244	0.186	0.18
Departure Headway (Hd)	4.595	4.225	4.267
Convergence, Y/N	Yes	Yes	Yes
Cap	782	851	842
Service Time	2.617	2.247	2.289
HCM Lane V/C Ratio	0.244	0.187	0.181
HCM Control Delay, s/veh	9.1	8.2	8.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1	0.7	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1109	73	146	884	0	41	0	185	0	0	3
Future Volume (veh/h)	4	1109	73	146	884	0	41	0	185	0	0	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	1205	79	159	961	0	45	0	201	0	0	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	10	1499	98	181	1916	0	307	0	273	0	0	3
Arrive On Green	0.01	0.44	0.44	0.10	0.54	0.00	0.17	0.00	0.17	0.00	0.00	0.00
Sat Flow, veh/h	1781	3385	222	1781	3647	0	1781	0	1582	0	0	1585
Grp Volume(v), veh/h	4	632	652	159	961	0	45	0	201	0	0	3
Grp Sat Flow(s),veh/h/ln	1781	1777	1830	1781	1777	0	1781	0	1582	0	0	1585
Q Serve(g_s), s	0.1	19.7	19.7	5.6	10.9	0.0	1.4	0.0	7.7	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.1	19.7	19.7	5.6	10.9	0.0	1.4	0.0	7.7	0.0	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.00	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	10	787	811	181	1916	0	307	0	273	0	0	3
V/C Ratio(X)	0.42	0.80	0.80	0.88	0.50	0.00	0.15	0.00	0.74	0.00	0.00	0.93
Avail Cap(c_a), veh/h	139	930	958	181	1943	0	821	0	729	0	0	62
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	31.7	15.4	15.4	28.4	9.3	0.0	22.5	0.0	25.1	0.0	0.0	31.9
Incr Delay (d2), s/veh	26.6	4.4	4.4	35.5	0.2	0.0	0.2	0.0	3.9	0.0	0.0	210.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	7.8	8.1	4.1	3.6	0.0	0.6	0.0	3.0	0.0	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.4	19.8	19.8	63.9	9.5	0.0	22.7	0.0	29.0	0.0	0.0	242.7
LnGrp LOS	E	B	B	E	A		C		C			F
Approach Vol, veh/h		1288			1120			246			3	
Approach Delay, s/veh		19.9			17.2			27.8			242.7	
Approach LOS		B			B			C			F	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		15.5	11.0	32.9		4.6	4.8	39.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		29.5	6.5	33.5		2.5	5.0	35.0
Max Q Clear Time (g_c+I1), s		9.7	7.6	21.7		2.1	2.1	12.9
Green Ext Time (p_c), s		1.3	0.0	6.6		0.0	0.0	7.3

Intersection Summary	
HCM 7th Control Delay, s/veh	19.8
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	176	195	1	1	15
Future Vol, veh/h	19	176	195	1	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	191	212	1	1	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	213	0	-	0	445	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1357	-	-	-	571	828
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	806	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1357	-	-	-	561	828
Mov Cap-2 Maneuver	-	-	-	-	561	-
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	806	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.75	0	9.58
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	175	-	-	-	804
HCM Lane V/C Ratio	0.015	-	-	-	0.022
HCM Control Delay (s/veh)	7.7	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	1	4	197	138	14
Future Vol, veh/h	13	1	4	197	138	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	1	4	214	150	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	380	158	165	0	-	0
Stage 1	158	-	-	-	-	-
Stage 2	223	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	622	888	1413	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	620	888	1413	-	-	-
Mov Cap-2 Maneuver	620	-	-	-	-	-
Stage 1	868	-	-	-	-	-
Stage 2	814	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.83	0.15	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	36	-	633	-	-
HCM Lane V/C Ratio	0.003	-	0.024	-	-
HCM Control Delay (s/veh)	7.6	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	285	521	0	301	11	742	528	75	21	331	17
Future Volume (vph)	0	285	521	0	301	11	742	528	75	21	331	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00			0.95	
Frpb, ped/bikes		1.00	1.00		0.99		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.99		1.00	0.98			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (prot)		1863	1583		3516		1770	1822			3503	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (perm)		1863	1583		3516		1770	1822			3503	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	310	566	0	327	12	807	574	82	23	360	18
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	3	0
Lane Group Flow (vph)	0	310	566	0	339	0	807	653	0	0	398	0
Confl. Peds. (#/hr)			1			4			2			2
Turn Type		NA	custom		NA		Split	NA		Split	NA	
Protected Phases		8	8 3		8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)		23.5	69.7		23.5		81.7	81.7			21.3	
Effective Green, g (s)		23.5	69.7		23.5		81.7	81.7			21.3	
Actuated g/C Ratio		0.17	0.50		0.17		0.58	0.58			0.15	
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		312	788		590		1032	1063			532	
v/s Ratio Prot		c0.17	0.36		0.10		c0.46	0.36			c0.11	
v/s Ratio Perm												
v/c Ratio		0.99	0.71		0.57		0.78	0.61			0.74	
Uniform Delay, d1		58.1	27.4		53.6		22.3	18.9			56.7	
Progression Factor		1.00	1.00		1.00		0.11	0.03			1.00	
Incremental Delay, d2		48.9	3.1		1.3		2.9	1.2			5.7	
Delay (s)		107.1	30.6		55.0		5.5	1.9			62.5	
Level of Service		F	C		E		A	A			E	
Approach Delay (s/veh)		57.6			55.0			3.9			62.5	
Approach LOS		E			E			A			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	743	0	602	3	609	228	14
Future Volume (vph)	0	0	0	0	0	743	0	602	3	609	228	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.5		4.5			4.5	
Lane Util. Factor						0.88		0.95			0.95	
Frt						0.85		0.99			0.99	
Flt Protected						1.00		1.00			0.96	
Satd. Flow (prot)						2787		3537			3409	
Flt Permitted						1.00		1.00			0.96	
Satd. Flow (perm)						2787		3537			3409	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	808	0	654	3	662	248	15
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	0	808	0	657	0	0	924	0
Turn Type						Prot		NA		Split	NA	
Protected Phases						3		2		1 3	1 3	
Permitted Phases												
Actuated Green, G (s)						46.2		31.0			100.0	
Effective Green, g (s)						46.2		31.0			100.0	
Actuated g/C Ratio						0.33		0.22			0.71	
Clearance Time (s)						4.5		4.5				
Vehicle Extension (s)						3.0		3.0				
Lane Grp Cap (vph)						919		783			2435	
v/s Ratio Prot						c0.29		c0.19			c0.27	
v/s Ratio Perm												
v/c Ratio						0.87		0.83			0.37	
Uniform Delay, d1						44.2		52.1			7.8	
Progression Factor						1.00		1.00			0.06	
Incremental Delay, d2						11.7		10.4			0.0	
Delay (s)						55.9		62.5			0.5	
Level of Service						E		E			A	
Approach Delay (s/veh)		0.0			55.9			62.5			0.5	
Approach LOS		A			E			E			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	36.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	42	0	0	0	14	601	0	0	241	6
Future Vol, veh/h	10	0	42	0	0	0	14	601	0	0	241	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	46	0	0	0	15	653	0	0	262	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	949	949	265	946	952	653	268	0	0	653	0	0
Stage 1	265	265	-	684	684	-	-	-	-	-	-	-
Stage 2	684	684	-	262	268	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	240	260	773	242	259	467	1295	-	-	934	-	-
Stage 1	740	689	-	439	449	-	-	-	-	-	-	-
Stage 2	439	449	-	743	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	238	257	773	225	256	467	1295	-	-	934	-	-
Mov Cap-2 Maneuver	238	257	-	225	256	-	-	-	-	-	-	-
Stage 1	740	689	-	434	444	-	-	-	-	-	-	-
Stage 2	434	444	-	699	687	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	12.45	0	0.18	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1295	-	-	539	-	934	-	-
HCM Lane V/C Ratio	0.012	-	-	0.105	-	-	-	-
HCM Control Delay (s/veh)	7.8	-	-	12.5	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	-	0	-	-

Intersection	
Int Delay, s/veh	5.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	113	71	542	124	87	191
Future Vol, veh/h	113	71	542	124	87	191
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	77	589	135	95	208

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1053	657	0	0	724	0
Stage 1	657	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	250	465	-	-	879	-
Stage 1	516	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	224	465	-	-	879	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	516	-	-	-	-	-
Stage 2	606	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	29.55	0	3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	224	465	879	-
HCM Lane V/C Ratio	-	-	0.55	0.166	0.108	-
HCM Control Delay (s/veh)	-	-	39.1	14.3	9.6	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	3	0.6	0.4	-

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	130	85	40	14	28	116
Future Vol, veh/h	130	85	40	14	28	116
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	92	43	15	30	126
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	9.3	7.7	8.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	0%	19%
Vol Thru, %	40%	74%	0%
Vol Right, %	0%	26%	81%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	215	54	144
LT Vol	130	0	28
Through Vol	85	40	0
RT Vol	0	14	116
Lane Flow Rate	234	59	157
Geometry Grp	1	1	1
Degree of Util (X)	0.291	0.071	0.181
Departure Headway (Hd)	4.477	4.376	4.163
Convergence, Y/N	Yes	Yes	Yes
Cap	809	819	864
Service Time	2.477	2.399	2.18
HCM Lane V/C Ratio	0.289	0.072	0.182
HCM Control Delay, s/veh	9.3	7.7	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.2	0.2	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	762	41	146	1238	0	60	0	198	0	0	0
Future Volume (veh/h)	1	762	41	146	1238	0	60	0	198	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	828	45	159	1346	0	65	0	215	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	1969	107	129	2293	0	362	0	312	0	2	0
Arrive On Green	0.00	0.57	0.57	0.07	0.65	0.00	0.20	0.00	0.20	0.00	0.00	0.00
Sat Flow, veh/h	1781	3427	186	1781	3647	0	1781	0	1536	0	1870	0
Grp Volume(v), veh/h	1	429	444	159	1346	0	65	0	215	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1836	1781	1777	0	1781	0	1536	0	1870	0
Q Serve(g_s), s	0.1	12.2	12.2	6.5	19.5	0.0	2.7	0.0	11.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	12.2	12.2	6.5	19.5	0.0	2.7	0.0	11.7	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	2	1021	1055	129	2293	0	362	0	312	0	2	0
V/C Ratio(X)	0.41	0.42	0.42	1.24	0.59	0.00	0.18	0.00	0.69	0.00	0.00	0.00
Avail Cap(c_a), veh/h	99	1021	1055	129	2293	0	584	0	503	0	52	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	44.9	10.7	10.7	41.7	9.1	0.0	29.6	0.0	33.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	83.8	1.3	1.2	156.0	1.1	0.0	0.2	0.0	2.7	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.8	4.9	8.4	6.8	0.0	1.2	0.0	4.5	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	128.7	12.0	12.0	197.8	10.2	0.0	29.9	0.0	35.9	0.0	0.0	0.0
LnGrp LOS	F	B	B	F	B		C		D			
Approach Vol, veh/h		874			1505			280			0	
Approach Delay, s/veh		12.1			30.0			34.5			0.0	
Approach LOS		B			C			C				

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	22.8	11.0	56.2	0.0	4.6	62.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	6.5	33.5	2.5	5.0	35.0
Max Q Clear Time (g_c+I1), s	13.7	8.5	14.2	0.0	2.1	21.5
Green Ext Time (p_c), s	1.4	0.0	5.6	0.0	0.0	8.0

Intersection Summary	
HCM 7th Control Delay, s/veh	24.6
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	196	151	3	11	25
Future Vol, veh/h	12	196	151	3	11	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	213	164	3	12	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	167	0	-	0	405	166
Stage 1	-	-	-	-	166	-
Stage 2	-	-	-	-	239	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1410	-	-	-	602	879
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	801	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1410	-	-	-	596	879
Mov Cap-2 Maneuver	-	-	-	-	596	-
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	801	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.44	0	9.94
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	104	-	-	-	767
HCM Lane V/C Ratio	0.009	-	-	-	0.051
HCM Control Delay (s/veh)	7.6	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	1	143	142	1
Future Vol, veh/h	1	1	1	143	142	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	1	155	154	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	313	155	155	0	-	0
Stage 1	155	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	680	891	1425	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	680	891	1425	-	-	-
Mov Cap-2 Maneuver	680	-	-	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	871	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.68	0.05	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	12	-	771	-	-
HCM Lane V/C Ratio	0.001	-	0.003	-	-
HCM Control Delay (s/veh)	7.5	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	320	671	0	237	22	633	520	44	22	486	24
Future Volume (vph)	0	320	671	0	237	22	633	520	44	22	486	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00			0.95	
Frpb, ped/bikes		1.00	1.00		1.00		1.00	0.99			0.99	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.98		1.00	0.98			0.99	
Flt Protected		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (prot)		1863	1583		3494		1770	1837			3505	
Flt Permitted		1.00	1.00		1.00		0.95	1.00			0.99	
Satd. Flow (perm)		1863	1583		3494		1770	1837			3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	348	729	0	258	24	688	565	48	24	528	26
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	348	729	0	282	0	688	611	0	0	576	0
Confl. Peds. (#/hr)			5						2			3
Turn Type		NA	custom		NA		Split	NA		Split	NA	
Protected Phases		8	8 3		8		5	5		6	6	
Permitted Phases												
Actuated Green, G (s)		28.7	74.4		28.7		81.2	81.2			26.6	
Effective Green, g (s)		28.7	74.4		28.7		81.2	81.2			26.6	
Actuated g/C Ratio		0.19	0.50		0.19		0.54	0.54			0.18	
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		356	785		668		958	994			621	
v/s Ratio Prot		c0.19	c0.46		0.08		c0.39	0.33			c0.16	
v/s Ratio Perm												
v/c Ratio		0.97	0.92		0.42		0.71	0.61			0.92	
Uniform Delay, d1		60.3	35.3		53.3		25.8	23.6			60.7	
Progression Factor		1.00	1.00		1.00		0.01	0.01			1.00	
Incremental Delay, d2		41.2	17.0		0.4		2.2	1.3			19.9	
Delay (s)		101.5	52.3		53.7		2.7	1.6			80.6	
Level of Service		F	D		D		A	A			F	
Approach Delay (s/veh)		68.2			53.7			2.2			80.6	
Approach LOS		E			D			A			F	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	42.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	752	0	445	14	782	339	35
Future Volume (vph)	0	0	0	0	0	752	0	445	14	782	339	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.5		4.5			4.5	
Lane Util. Factor						0.88		0.95			0.95	
Frpb, ped/bikes						1.00		0.99			1.00	
Flpb, ped/bikes						1.00		1.00			1.00	
Frt						0.85		0.99			0.99	
Flt Protected						1.00		1.00			0.96	
Satd. Flow (prot)						2787		3522			3408	
Flt Permitted						1.00		1.00			0.96	
Satd. Flow (perm)						2787		3522			3408	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	817	0	484	15	850	368	38
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	0	817	0	497	0	0	1255	0
Confl. Peds. (#/hr)									1			
Turn Type						Prot		NA		Split	NA	
Protected Phases						3		2		1 3	1 3	
Permitted Phases												
Actuated Green, G (s)						45.7		31.0			110.0	
Effective Green, g (s)						45.7		31.0			110.0	
Actuated g/C Ratio						0.30		0.21			0.73	
Clearance Time (s)						4.5		4.5				
Vehicle Extension (s)						3.0		3.0				
Lane Grp Cap (vph)						849		727			2499	
v/s Ratio Prot						c0.29		c0.14			c0.37	
v/s Ratio Perm												
v/c Ratio						0.96		0.68			0.50	
Uniform Delay, d1						51.3		54.9			8.4	
Progression Factor						1.00		1.00			0.06	
Incremental Delay, d2						22.9		5.1			0.0	
Delay (s)						74.2		60.1			0.5	
Level of Service						E		E			A	
Approach Delay (s/veh)		0.0			74.2			60.1			0.5	
Approach LOS		A			E			E			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	0	18	0	0	0	19	445	0	0	330	4
Future Vol, veh/h	22	0	18	0	0	0	19	445	0	0	330	4
Conflicting Peds, #/hr	0	0	2	0	0	0	0	0	9	0	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	20	0	0	0	21	484	0	0	359	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	894	903	371	895	905	493	371	0	0	493	0	0
Stage 1	369	369	-	534	534	-	-	-	-	-	-	-
Stage 2	525	534	-	361	371	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	262	277	675	262	276	576	1187	-	-	1071	-	-
Stage 1	651	621	-	530	524	-	-	-	-	-	-	-
Stage 2	536	524	-	658	619	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	255	268	669	247	267	571	1178	-	-	1062	-	-
Mov Cap-2 Maneuver	255	268	-	247	267	-	-	-	-	-	-	-
Stage 1	646	616	-	516	511	-	-	-	-	-	-	-
Stage 2	526	511	-	637	615	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	16.6	0	0.33	0
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1178	-	-	354	-	1062	-	-
HCM Lane V/C Ratio	0.018	-	-	0.123	-	-	-	-
HCM Control Delay (s/veh)	8.1	-	-	16.6	0	0	-	-
HCM Lane LOS	A	-	-	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	-	0	-	-

Intersection	
Int Delay, s/veh	5.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	127	88	373	129	78	273
Future Vol, veh/h	127	88	373	129	78	273
Conflicting Peds, #/hr	1	0	0	6	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	138	96	405	140	85	297

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	949	482	0	0	552	0
Stage 1	482	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	289	585	-	-	1018	-
Stage 1	621	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	263	581	-	-	1012	-
Mov Cap-2 Maneuver	263	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	577	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	24.48	0	1.97
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	263	581	1012	-
HCM Lane V/C Ratio	-	-	0.525	0.165	0.084	-
HCM Control Delay (s/veh)	-	-	32.8	12.4	8.9	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	2.8	0.6	0.3	-

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	145	37	82	64	26	120
Future Vol, veh/h	145	37	82	64	26	120
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	158	40	89	70	28	130
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	9.2	8.3	8.3
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	80%	0%	18%
Vol Thru, %	20%	56%	0%
Vol Right, %	0%	44%	82%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	182	146	146
LT Vol	145	0	26
Through Vol	37	82	0
RT Vol	0	64	120
Lane Flow Rate	198	159	159
Geometry Grp	1	1	1
Degree of Util (X)	0.254	0.187	0.189
Departure Headway (Hd)	4.614	4.249	4.279
Convergence, Y/N	Yes	Yes	Yes
Cap	779	844	839
Service Time	2.638	2.274	2.302
HCM Lane V/C Ratio	0.254	0.188	0.19
HCM Control Delay, s/veh	9.2	8.3	8.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1	0.7	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1110	71	142	884	0	35	0	187	0	0	3
Future Volume (veh/h)	4	1110	71	142	884	0	35	0	187	0	0	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	1207	77	154	961	0	38	0	203	0	0	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	10	1501	96	181	1914	0	309	0	274	0	0	3
Arrive On Green	0.01	0.44	0.44	0.10	0.54	0.00	0.17	0.00	0.17	0.00	0.00	0.00
Sat Flow, veh/h	1781	3392	216	1781	3647	0	1781	0	1582	0	0	1585
Grp Volume(v), veh/h	4	632	652	154	961	0	38	0	203	0	0	3
Grp Sat Flow(s),veh/h/ln	1781	1777	1831	1781	1777	0	1781	0	1582	0	0	1585
Q Serve(g_s), s	0.1	19.7	19.8	5.5	11.0	0.0	1.2	0.0	7.8	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.1	19.7	19.8	5.5	11.0	0.0	1.2	0.0	7.8	0.0	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.00	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	10	786	810	181	1914	0	309	0	274	0	0	3
V/C Ratio(X)	0.42	0.80	0.80	0.85	0.50	0.00	0.12	0.00	0.74	0.00	0.00	0.93
Avail Cap(c_a), veh/h	139	929	957	181	1940	0	820	0	728	0	0	62
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	31.8	15.5	15.5	28.3	9.4	0.0	22.4	0.0	25.1	0.0	0.0	32.0
Incr Delay (d2), s/veh	26.6	4.4	4.4	30.4	0.2	0.0	0.2	0.0	3.9	0.0	0.0	210.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	7.9	8.1	3.7	3.6	0.0	0.5	0.0	3.1	0.0	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.4	19.9	19.8	58.7	9.6	0.0	22.6	0.0	29.1	0.0	0.0	242.7
LnGrp LOS	E	B	B	E	A		C		C			F
Approach Vol, veh/h		1288			1115			241			3	
Approach Delay, s/veh		20.0			16.3			28.0			242.7	
Approach LOS		B			B			C			F	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	15.6	11.0	32.9	4.6	4.8	39.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	29.5	6.5	33.5	2.5	5.0	35.0
Max Q Clear Time (g_c+I1), s	9.8	7.5	21.8	2.1	2.1	13.0
Green Ext Time (p_c), s	1.3	0.0	6.6	0.0	0.0	7.3

Intersection Summary	
HCM 7th Control Delay, s/veh	19.4
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	174	195	6	8	18
Future Vol, veh/h	27	174	195	6	8	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	189	212	7	9	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	218	0	-	0	463	215
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	248	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1351	-	-	-	557	825
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	793	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1351	-	-	-	544	825
Mov Cap-2 Maneuver	-	-	-	-	544	-
Stage 1	-	-	-	-	801	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.04	0	10.27
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	242	-	-	-	711
HCM Lane V/C Ratio	0.022	-	-	-	0.04
HCM Control Delay (s/veh)	7.7	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	2	205	143	3
Future Vol, veh/h	1	1	2	205	143	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	2	223	155	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	384	157	159	0	-	0
Stage 1	157	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	619	888	1421	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	811	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	618	888	1421	-	-	-
Mov Cap-2 Maneuver	618	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	811	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.96	0.07	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	17	-	729	-	-
HCM Lane V/C Ratio	0.002	-	0.003	-	-
HCM Control Delay (s/veh)	7.5	0	10	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-