

TECHNICAL APPENDICES
LAS POSAS GAS STATION
San Marcos, California
June 23, 2022

LLG Ref. 3-20-3314

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APPENDICES

APPENDIX

- A. Intersection and Segment Manual Count Sheets
- B. Existing Peak Hour Intersection Analysis Worksheets
- C. Near-Term (Year 2025) without Project Peak Hour Intersection Analysis Worksheets
- D. Near-Term (Year 2025) + Project Peak Hour Intersection Analysis Worksheets
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ATTACHMENT A
INTERSECTION AND SEGMENT MANUAL COUNT SHEETS

Intersection Turning Movement - Peak Hour Vehicle Count



Location: #01	File Name: ITM-21-001-01
Intersection: N. Rancho Santa Fe Road & S. Santa Fe Avenue	Project: LLG Ref. 3-20-3314
Date of Count: Thursday, January 07, 2021	Las Posas Gas Station

AM	N Rancho Santa Fe Rd Southbound			Westbound			N Rancho Santa Fe Rd Northbound			S. Santa Fe Avenue Eastbound			Total
	U-Turn	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	1	57	42	0	0	0	19	32	0	33	0	23	207
7:15	2	56	44	0	0	0	23	40	0	51	0	16	232
7:30	1	51	48	0	0	0	14	39	0	42	0	24	219
7:45	0	62	32	0	0	0	22	48	0	39	0	59	262
8:00	2	53	38	0	0	0	15	40	0	48	0	66	262
8:15	1	78	44	0	0	0	19	36	0	34	0	68	280
8:30	1	59	51	0	0	0	24	41	0	40	0	42	258
8:45	0	60	46	0	0	0	16	43	0	49	0	37	251
Total	8	476	345	0	0	0	152	319	0	336	0	335	1971
Approach%	1.0	57.4	41.6	-	-	-	32.3	67.7	-	50.1	-	49.9	
Total%	0.4	24.2	17.5	-	-	-	7.7	16.2	-	17.0	-	17.0	

AM Intersection Peak Hour: 07:45 to 08:45

Volume	4	252	165	-	-	-	80	165	-	161	-	235	1,062
Approach%	1.0	59.9	39.2	-	-	-	32.7	67.3	-	40.7	-	59.3	
Total%	0.4	23.7	15.5	-	-	-	7.5	15.5	-	15.2	-	22.1	
PHF			0.86			#DIV/0!			0.88			0.87	0.94

PM	N Rancho Santa Fe Rd Southbound			Westbound			N Rancho Santa Fe Rd Northbound			S. Santa Fe Avenue Eastbound			Total
	U-Turn	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	1	80	62	0	0	0	23	48	0	73	0	37	324
16:15	0	91	46	0	0	0	33	56	0	78	0	42	346
16:30	0	96	56	0	0	0	23	54	0	70	0	48	347
16:45	0	94	45	0	0	0	31	60	0	83	0	42	355
17:00	0	106	77	0	0	0	25	54	0	62	0	42	366
17:15	0	64	47	0	0	0	24	60	0	56	0	47	298
17:30	0	64	38	0	0	0	28	48	0	52	0	38	268
17:45	0	69	52	0	0	0	14	44	0	66	0	51	296
Total	1	664	423	0	0	0	201	424	0	540	0	347	2600
Approach%	0.1	61.0	38.9	-	-	-	32.2	67.8	-	60.9	-	39.1	
Total%	0.0	25.5	16.3	-	-	-	7.7	16.3	-	20.8	-	13.3	

PM Intersection Peak Hour: 16:15 to 17:15

Volume	-	387	224	-	-	-	112	224	-	293	-	174	1,414
Approach%	-	63.3	36.7	-	-	-	33.3	66.7	-	62.7	-	37.3	
Total%	-	27.4	15.8	-	-	-	7.9	15.8	-	20.7	-	12.3	
PHF			0.83			#DIV/0!			0.92			0.93	0.96

Intersection Turning Movement - Bicycle & Pedestrian Count



Location: #01	File Name: ITM-21-001-01
Intersection: N. Rancho Santa Fe Road & S. Santa Fe Avenue	Project: LLG Ref. 3-20-3314
Date of Count: Thursday, January 07, 2021	Las Posas Gas Station

AM	N Rancho Santa Fe Rd Southbound				Westbound				N Rancho Santa Fe Rd Northbound				S. Santa Fe Avenue Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0	3	1
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Ped Total	0				0				0				4				4	
Bike Total		0	0	0		0	0	0		1	0	0		0	0	0		1

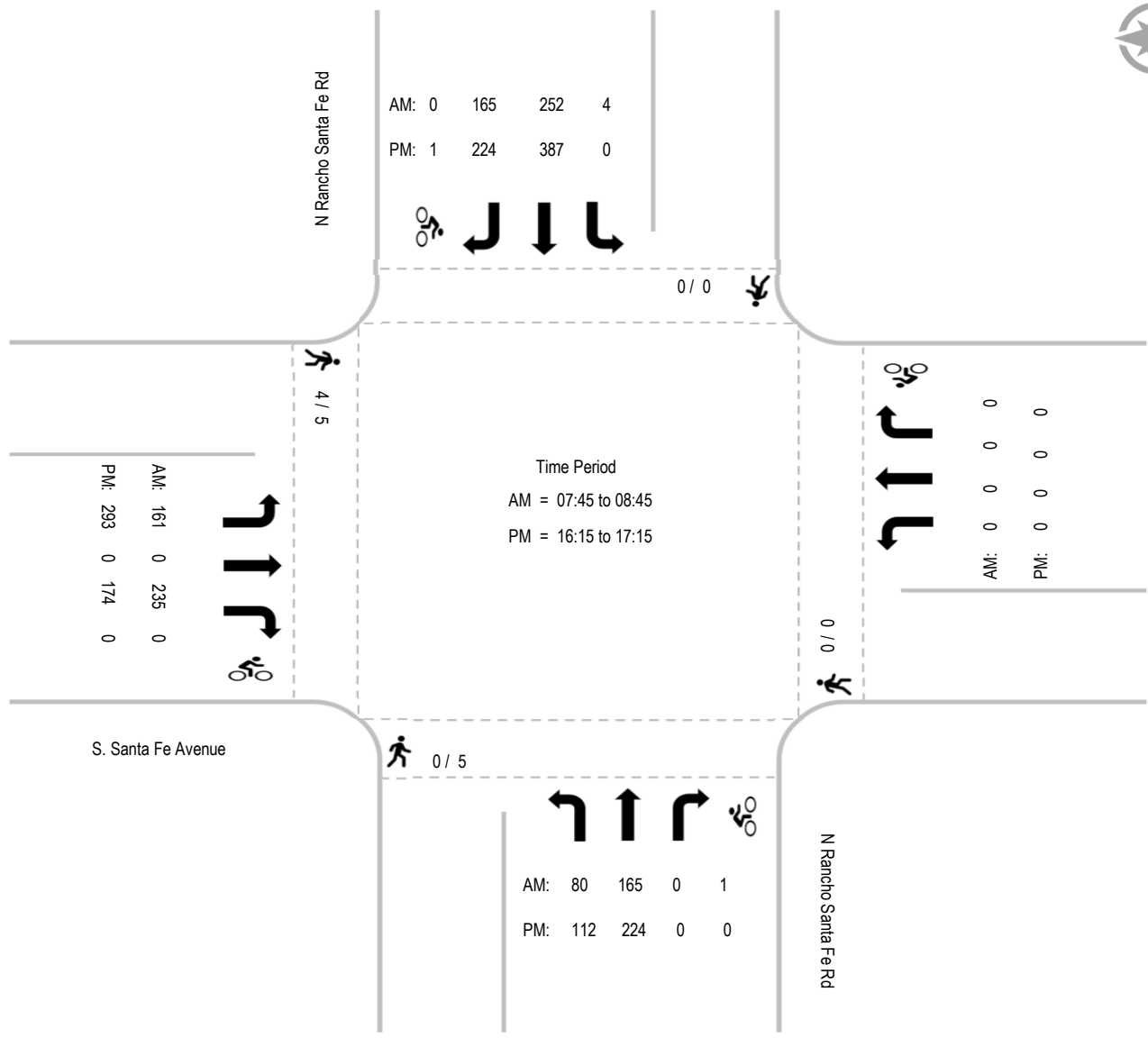
PM	N Rancho Santa Fe Rd Southbound				Westbound				N Rancho Santa Fe Rd Northbound				S. Santa Fe Avenue Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0
17:30	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0
17:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Ped Total	0				0				5				5				10	
Bike Total		0	1	0		0	0	0		0	0	0		0	0	0		1

Intersection Turning Movement - Peak Hour Summary



Location: #01
 Intersection: N. Rancho Santa Fe Road & S. Santa Fe Avenue
 Date of Count: Thursday, January 07, 2021

File Name: ITM-21-001-01
 Project: LLG Ref. 3-20-3314
 Las Posas Gas Station



Intersection Turning Movement - Peak Hour Vehicle Count



Location:	#02	File Name:	ITM-21-001-02
Intersection:	N. Las Posas Road & W. Mission Road	Project:	LLG Ref. 3-20-3314
Date of Count:	Thursday, January 07, 2021		Las Posas Gas Station

AM	N. Las Posas Road Southbound			W. Mission Road Westbound			N. Las Posas Road Northbound			W. Mission Road Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	5	75	3	32	30	2	7	22	51	9	55	5	296
7:15	7	85	10	32	29	1	6	26	50	9	48	8	311
7:30	5	108	8	34	30	7	4	25	39	2	58	6	326
7:45	7	94	13	56	49	4	6	36	60	10	83	8	426
8:00	8	93	13	29	40	6	7	33	42	14	95	20	400
8:15	4	78	9	35	31	5	6	33	56	18	117	17	409
8:30	6	81	12	24	33	2	21	71	46	22	71	15	404
8:45	0	64	7	35	42	6	7	45	52	10	60	16	344
Total	42	678	75	277	284	33	64	291	396	94	587	95	2916
Approach%	5.3	85.3	9.4	46.6	47.8	5.6	8.5	38.7	52.7	12.1	75.6	12.2	
Total%	1.4	23.3	2.6	9.5	9.7	1.1	2.2	10.0	13.6	3.2	20.1	3.3	

AM Intersection Peak Hour: 07:45 to 08:45

Volume	25	346	47	144	153	17	40	173	204	64	366	60	1,639
Approach%	6.0	82.8	11.2	45.9	48.7	5.4	9.6	41.5	48.9	13.1	74.7	12.2	
Total%	1.5	21.1	2.9	8.8	9.3	1.0	2.4	10.6	12.4	3.9	22.3	3.7	
PHF			0.92			0.72			0.76			0.81	0.94

PM	N. Las Posas Road Southbound			W. Mission Road Westbound			N. Las Posas Road Northbound			W. Mission Road Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	8	80	11	35	53	7	14	105	50	21	85	14	483
16:15	17	76	6	25	71	16	27	97	49	20	75	15	494
16:30	14	76	13	22	47	15	12	127	35	26	91	6	484
16:45	9	75	12	26	61	10	16	115	40	24	94	19	501
17:00	7	79	10	34	45	8	23	124	37	30	80	19	496
17:15	5	75	9	38	64	6	23	154	53	39	62	11	539
17:30	13	68	7	34	41	7	27	121	37	27	69	19	470
17:45	9	71	13	25	42	12	20	120	31	39	58	14	454
Total	82	600	81	239	424	81	162	963	332	226	614	117	3921
Approach%	10.7	78.6	10.6	32.1	57.0	10.9	11.1	66.1	22.8	23.6	64.2	12.2	
Total%	2.1	15.3	2.1	6.1	10.8	2.1	4.1	24.6	8.5	5.8	15.7	3.0	

PM Intersection Peak Hour: 16:30 to 17:30

Volume	35	305	44	120	217	39	74	520	165	119	327	55	2,020
Approach%	9.1	79.4	11.5	31.9	57.7	10.4	9.7	68.5	21.7	23.8	65.3	11.0	
Total%	1.7	15.1	2.2	5.9	10.7	1.9	3.7	25.7	8.2	5.9	16.2	2.7	
PHF			0.93			0.87			0.83			0.91	0.96

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN <i>engineers</i>	Location: #02	File Name: ITM-21-001-02
	Intersection: N. Las Posas Road & W. Mission Road	Project: LLG Ref. 3-20-3314
	Date of Count: Thursday, January 07, 2021	Las Posas Gas Station

AM	N. Las Posas Road Southbound				W. Mission Road Westbound				N. Las Posas Road Northbound				W. Mission Road Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0
7:15	0	0	0	0	1	0	2	0	1	0	0	0	1	0	0	0	3	2
7:30	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	2	1
7:45	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0
8:00	1	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	2	2
8:15	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	2	1
8:30	1	0	0	0	0	0	3	0	3	0	0	0	1	0	2	0	5	5
8:45	0	0	0	0	0	0	2	0	1	0	0	0	1	0	2	0	2	4
Ped Total	2				6				8				4				20	
Bike Total		0	1	0		0	10	0		0	0	0		0	4	0		15

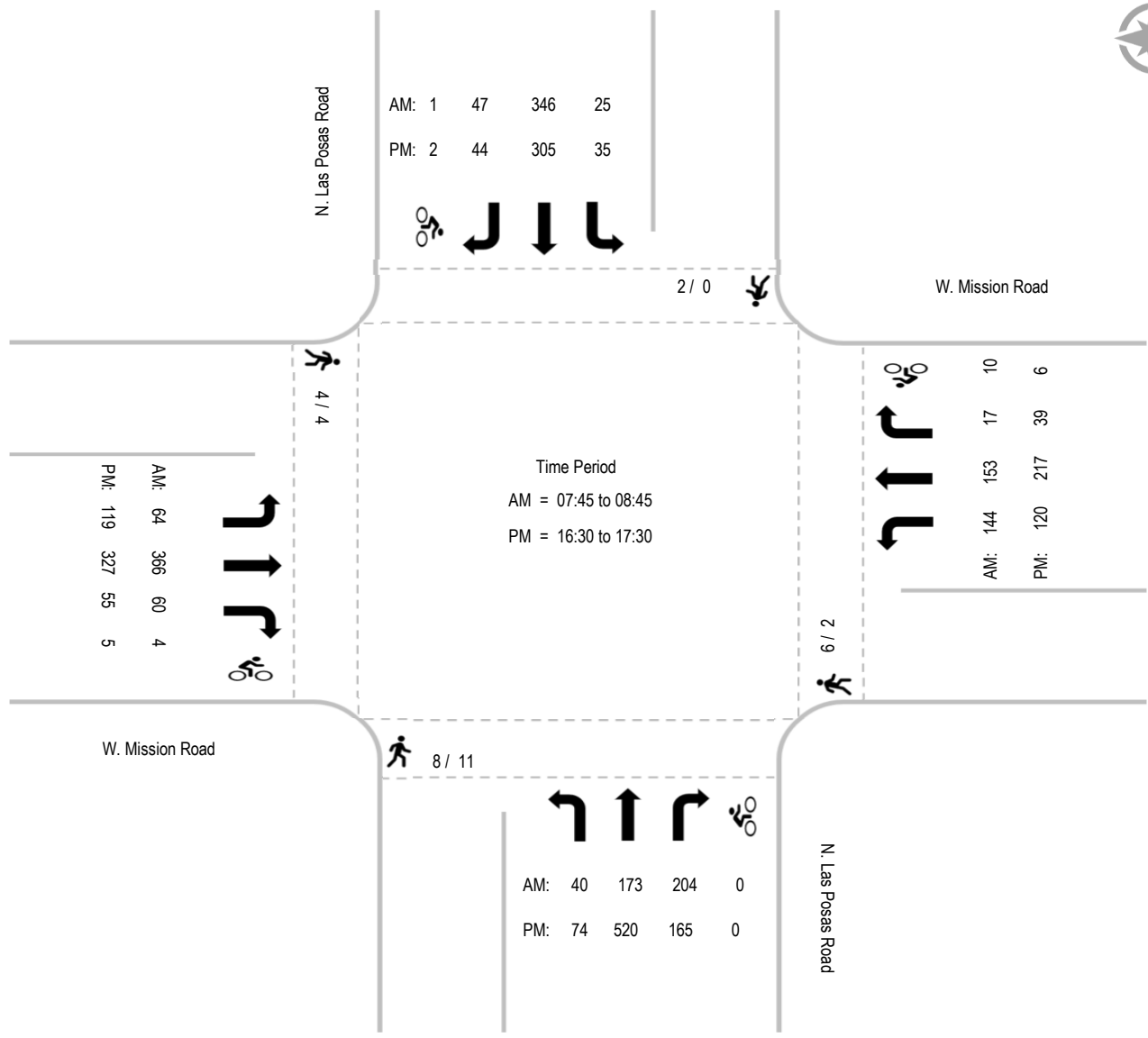
PM	N. Las Posas Road Southbound				W. Mission Road Westbound				N. Las Posas Road Northbound				W. Mission Road Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	1	0	0	0	0	2	0	1	0	0	0	0	0	1	0	1	4
16:15	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
16:30	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	3	0
16:45	0	0	0	0	1	0	1	0	7	0	0	0	2	0	2	1	10	4
17:00	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1
17:15	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1
17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				2				11				4				17	
Bike Total		1	1	0		0	5	1		0	0	0		0	4	1		13

Intersection Turning Movement - Peak Hour Summary

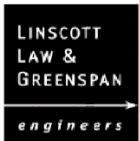


Location: #02
 Intersection: N. Las Posas Road & W. Mission Road
 Date of Count: Thursday, January 07, 2021

File Name: ITM-21-001-02
 Project: LLG Ref. 3-20-3314
 Las Posas Gas Station



Intersection Turning Movement - Peak Hour Vehicle Count



Location:	#03	File Name:	ITM-21-001-03
Intersection:	N. Las Posas Road & Armorlite Drive	Project:	LLG Ref. 3-20-3314
Date of Count:	Thursday, January 07, 2021		Las Posas Gas Station

AM	N. Las Posas Road Southbound			Armorlite Drive Westbound			N. Las Posas Road Northbound			Armorlite Drive Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	7	106	5	28	1	3	13	72	14	3	2	9	263
7:15	1	121	3	21	1	7	6	81	17	2	1	5	266
7:30	4	140	2	30	0	5	4	62	15	1	1	8	272
7:45	3	150	2	19	1	8	2	105	23	0	0	3	316
8:00	9	132	6	21	1	5	5	77	17	1	0	4	278
8:15	9	117	1	21	1	8	6	98	21	0	0	6	288
8:30	12	112	0	23	1	14	5	90	17	1	1	4	280
8:45	6	98	1	18	1	11	3	99	22	0	0	6	265
Total	51	976	20	181	7	61	44	684	146	8	5	45	2228
Approach%	4.9	93.2	1.9	72.7	2.8	24.5	5.0	78.3	16.7	13.8	8.6	77.6	
Total%	2.3	43.8	0.9	8.1	0.3	2.7	2.0	30.7	6.6	0.4	0.2	2.0	

AM Intersection Peak Hour: 07:45 to 08:45

Volume	33	511	9	84	4	35	18	370	78	2	1	17	1,162
Approach%	6.0	92.4	1.6	68.3	3.3	28.5	3.9	79.4	16.7	10.0	5.0	85.0	
Total%	2.8	44.0	0.8	7.2	0.3	3.0	1.5	31.8	6.7	0.2	0.1	1.5	
PHF			0.89			0.81			0.90			0.83	0.94

PM	N. Las Posas Road Southbound			Armorlite Drive Westbound			N. Las Posas Road Northbound			Armorlite Drive Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	13	122	0	32	0	12	5	155	30	2	1	0	372
16:15	11	103	0	21	2	13	2	188	30	0	0	0	370
16:30	11	91	0	31	0	11	3	175	38	1	0	0	361
16:45	16	112	1	22	0	12	2	160	35	1	0	0	361
17:00	9	109	1	54	0	17	2	186	45	3	0	0	426
17:15	14	107	2	27	0	13	5	199	47	2	0	0	416
17:30	11	113	1	30	0	11	3	188	48	1	1	0	407
17:45	9	93	0	14	1	6	0	152	46	0	0	0	321
Total	94	850	5	231	3	95	22	1403	319	10	2	0	3034
Approach%	9.9	89.6	0.5	70.2	0.9	28.9	1.3	80.4	18.3	83.3	16.7	-	
Total%	3.1	28.0	0.2	7.6	0.1	3.1	0.7	46.2	10.5	0.3	0.1	-	

PM Intersection Peak Hour: 16:45 to 17:45

Volume	50	441	5	133	-	53	12	733	175	7	1	-	1,610
Approach%	10.1	88.9	1.0	71.5	-	28.5	1.3	79.7	19.0	87.5	12.5	-	
Total%	3.1	27.4	0.3	8.3	-	3.3	0.7	45.5	10.9	0.4	0.1	-	
PHF			0.96			0.65			0.92			0.67	0.96

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN <i>engineers</i>	Location: #03	File Name: ITM-21-001-03
	Intersection: N. Las Posas Road & Armorlite Drive	Project: LLG Ref. 3-20-3314
	Date of Count: Thursday, January 07, 2021	Las Posas Gas Station

AM	N. Las Posas Road Southbound				Armorlite Drive Westbound				N. Las Posas Road Northbound				Armorlite Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:15	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	0
7:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
7:45	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
8:00	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1
8:15	0	0	0	0	0	0	0	0	1	0	2	0	2	0	0	0	3	2
8:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:45	2	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	4	1
Ped Total	4				5				1				5				15	
Bike Total		0	1	0		0	0	0		0	3	1		0	0	0		5

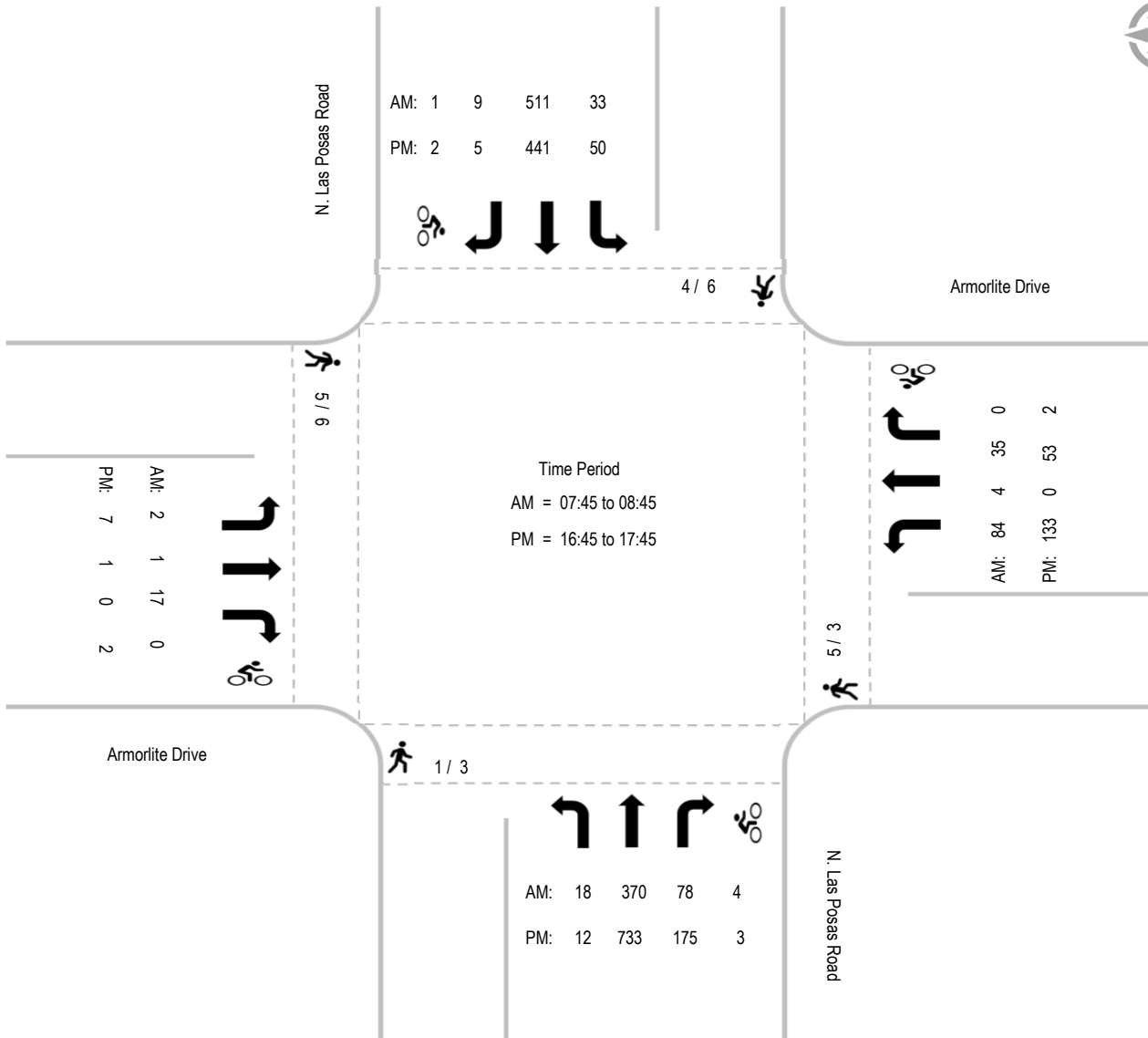
PM	N. Las Posas Road Southbound				Armorlite Drive Westbound				N. Las Posas Road Northbound				Armorlite Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	1	0	0	0	1	0	1	0	1	0	1	0	0	0	2	3
16:30	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	2	1
16:45	1	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0	2	3
17:00	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	3	0
17:15	4	0	0	0	1	0	0	0	0	0	0	0	2	0	1	0	7	1
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	1
Ped Total	6				3				3				6				18	
Bike Total		0	2	0		1	1	0		0	3	0		0	2	0		9

Intersection Turning Movement - Peak Hour Summary



Location: #03
 Intersection: N. Las Posas Road & Armorlite Drive
 Date of Count: Thursday, January 07, 2021

File Name: ITM-21-001-03
 Project: LLG Ref. 3-20-3314
 Las Posas Gas Station



Intersection Turning Movement - Peak Hour Vehicle Count



Location:	#04	File Name:	ITM-21-001-04
Intersection:	Palomar College Driveway & W. Mission Road	Project:	LLG Ref. 3-20-3314
Date of Count:	Thursday, January 07, 2021		Las Posas Gas Station

AM	Palomar College Drwy Southbound			W. Mission Road Westbound			-			W. Mission Road Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	1	0	2	0	60	2	0	0	0	6	105	0	176
7:15	0	0	2	0	67	1	0	0	0	4	106	0	180
7:30	1	0	3	0	69	3	0	0	0	3	102	0	181
7:45	1	0	2	0	96	4	0	0	0	6	154	0	263
8:00	1	0	3	0	67	1	0	0	0	4	138	0	214
8:15	1	0	4	0	64	5	0	0	0	4	181	0	259
8:30	2	0	4	0	63	3	0	0	0	4	128	0	204
8:45	1	0	3	0	72	2	0	0	0	7	117	0	202
Total	8	0	23	0	558	21	0	0	0	38	1031	0	1679
Approach%	25.8	-	74.2	-	96.4	3.6	-	-	-	3.6	96.4	-	
Total%	0.5	-	1.4	-	33.2	1.3	-	-	-	2.3	61.4	-	

AM Intersection Peak Hour: 07:45 to 08:45

Volume	5	-	13	-	290	13	-	-	-	18	601	-	940
Approach%	27.8	-	72.2	-	95.7	4.3	-	-	-	2.9	97.1	-	
Total%	0.5	-	1.4	-	30.9	1.4	-	-	-	1.9	63.9	-	
PHF			0.75			0.76			#DIV/0!			0.84	0.94

PM	Palomar College Drwy Southbound			W. Mission Road Westbound			-			W. Mission Road Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	4	0	1	0	96	0	0	0	0	4	138	0	243
16:15	1	0	4	0	105	1	0	0	0	1	152	0	264
16:30	1	0	1	0	88	1	0	0	0	4	152	0	247
16:45	1	0	3	0	94	1	0	0	0	2	150	0	251
17:00	4	0	5	0	77	0	0	0	0	2	123	0	211
17:15	2	0	6	0	100	1	0	0	0	4	119	0	232
17:30	3	0	2	0	90	0	0	0	0	3	116	0	214
17:45	1	0	4	0	71	1	0	0	0	5	94	0	176
Total	17	0	26	0	721	5	0	0	0	25	1044	0	1838
Approach%	39.5	-	60.5	-	99.3	0.7	-	-	-	2.3	97.7	-	
Total%	0.9	-	1.4	-	39.2	0.3	-	-	-	1.4	56.8	-	

PM Intersection Peak Hour: 16:00 to 17:00

Volume	7	-	9	-	383	3	-	-	-	11	592	-	1,005
Approach%	43.8	-	56.3	-	99.2	0.8	-	-	-	1.8	98.2	-	
Total%	0.7	-	0.9	-	38.1	0.3	-	-	-	1.1	58.9	-	
PHF			0.80			0.91			#DIV/0!			0.97	0.96

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN <i>engineers</i>	Location: #04	File Name: ITM-21-001-04
	Intersection: Palomar College Driveway & W. Mission Road	Project: LLG Ref. 3-20-3314
	Date of Count: Thursday, January 07, 2021	Las Posas Gas Station

AM	Palomar College Drwy Southbound				W. Mission Road Westbound				-				W. Mission Road Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
7:15	0	0	0	0	0	0	1	0	0	0	0	0	8	0	0	0	8	1
7:30	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
7:45	2	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0
8:00	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	5	0
8:15	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1
Ped Total	6				0				0				26				32	
Bike Total		0	0	0		0	1	0		0	0	0		0	1	0		2

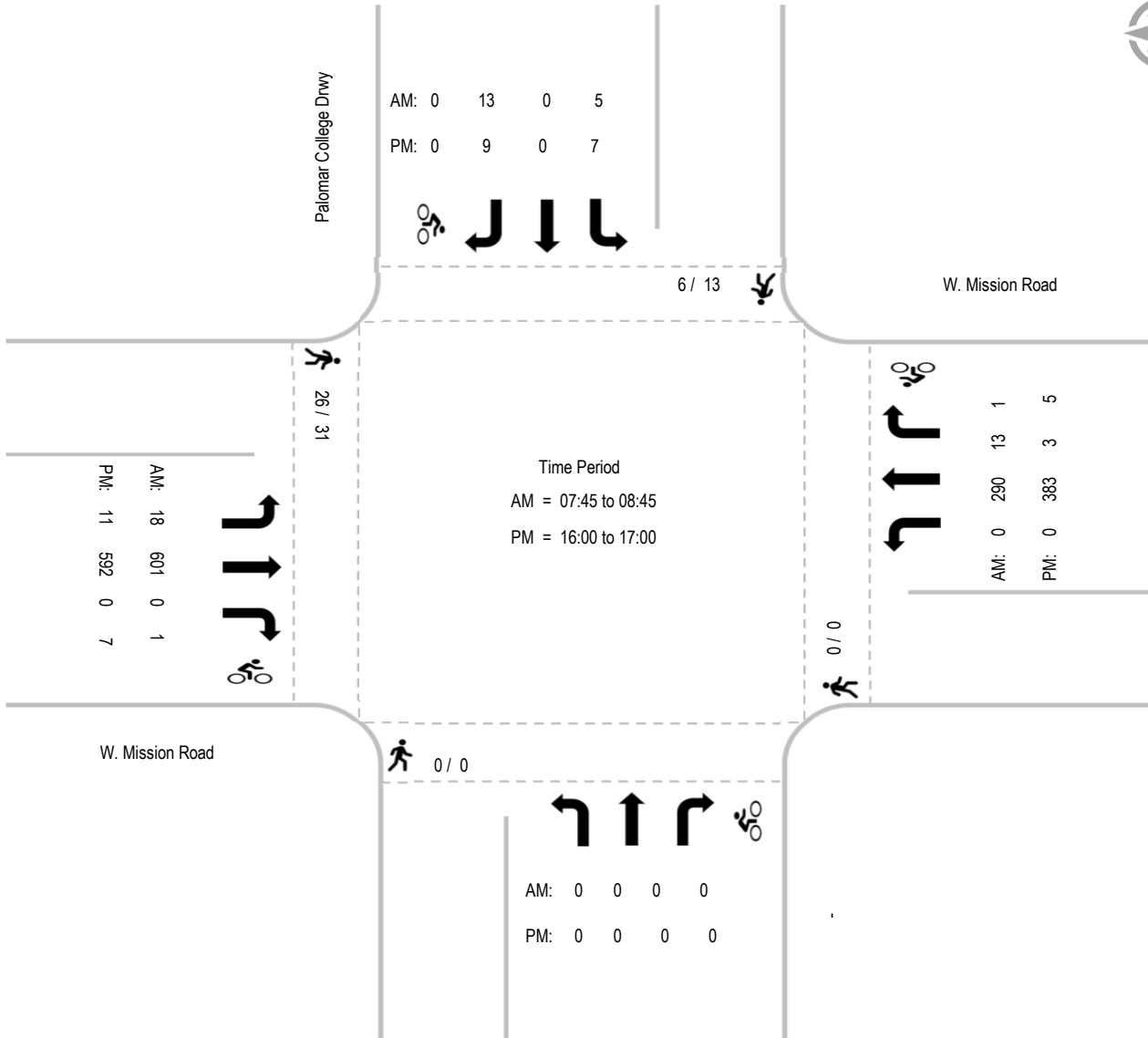
PM	Palomar College Drwy Southbound				W. Mission Road Westbound				-				W. Mission Road Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	5	0	2	0	5	2
16:15	4	0	0	0	0	0	1	0	0	0	0	0	0	2	1	0	4	4
16:30	3	0	0	0	0	0	1	0	0	0	0	0	8	0	1	0	11	2
16:45	2	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0
17:00	1	0	0	0	0	0	3	0	0	0	0	0	5	0	0	0	6	3
17:15	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	5	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:45	2	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	5	1
Ped Total	13				0				0				31				44	
Bike Total		0	0	0		0	5	0		0	0	0		2	5	0		12

Intersection Turning Movement - Peak Hour Summary



Location: #04
 Intersection: Palomar College Driveway & W. Mission Road
 Date of Count: Thursday, January 07, 2021

File Name: ITM-21-001-04
 Project: LLG Ref. 3-20-3314
 Las Posas Gas Station



Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **W. Mission Road, West of N. Las Posas Road**

Date: Thursday, January 7, 2021					Total Daily Volume: 8763										Description: Total Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
21	38	25	23	72	166	299	547	709	413	432	485	509	547	641	786	841	780	504	309	234	193	112	77
3	4	4	7	13	27	64	113	184	123	112	114	125	137	156	159	198	206	138	91	81	53	39	22
8	9	4	4	11	33	69	116	222	103	104	147	123	121	144	181	200	209	122	83	57	51	32	21
2	10	9	8	20	41	76	128	169	97	110	103	121	139	170	223	209	189	132	60	47	48	22	18
8	15	8	4	28	65	90	190	134	90	106	121	140	150	171	223	234	176	112	75	49	41	19	16

Date: Thursday, January 7, 2021					Total Daily Volume: 5009										Description: Eastbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
13	27	15	9	37	83	153	342	478	230	239	251	280	295	339	463	504	463	269	181	128	106	62	42
2	4	1	5	7	17	28	71	127	73	56	50	72	77	74	102	117	131	73	57	44	29	21	10
5	5	3	1	5	15	32	68	165	61	54	81	71	67	74	108	106	115	72	48	34	27	20	11
1	6	5	2	11	18	41	75	104	50	63	54	61	79	99	121	134	107	66	34	25	26	8	9
5	12	6	1	14	33	52	128	82	46	66	66	76	72	92	132	147	110	58	42	25	24	13	12

Date: Thursday, January 7, 2021					Total Daily Volume: 3754										Description: Westbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
8	11	10	14	35	83	146	205	231	183	193	234	229	252	302	323	337	317	235	128	106	87	50	35
1	0	3	2	6	10	36	42	57	50	56	64	53	60	82	57	81	75	65	34	37	24	18	12
3	4	1	3	6	18	37	48	57	42	50	66	52	54	70	73	94	94	50	35	23	24	12	10
1	4	4	6	9	23	35	53	65	47	47	49	60	60	71	102	75	82	66	26	22	22	14	9
3	3	2	3	14	32	38	62	52	44	40	55	64	78	79	91	87	66	54	33	24	17	6	4

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Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **W. Mission Road, East of N. Las Posas Road**

Date: Thursday, January 7, 2021					Total Daily Volume: 10260										Description: Total Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
16	21	23	23	79	176	430	854	884	569	491	533	602	617	729	947	1017	869	496	308	243	175	92	66
4	3	5	3	9	21	71	186	215	187	146	137	171	201	159	210	245	219	135	76	68	43	33	13
6	5	3	2	14	29	83	179	273	125	102	135	154	134	167	216	273	253	137	100	73	54	23	23
2	7	8	9	22	46	116	193	202	130	119	140	151	137	197	252	251	208	115	58	49	36	20	13
4	6	7	9	34	80	160	296	194	127	124	121	126	145	206	269	248	189	109	74	53	42	16	17

Date: Thursday, January 7, 2021					Total Daily Volume: 5615										Description: Eastbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
8	13	12	8	27	64	198	520	583	305	231	252	299	331	403	544	591	479	267	174	134	92	50	30
1	3	3	0	5	8	22	117	138	99	64	62	90	97	81	134	143	126	73	42	39	21	18	4
3	3	2	2	3	10	32	112	198	69	45	66	76	77	91	114	146	128	79	59	42	24	15	10
1	4	4	3	9	18	57	113	127	75	57	68	74	74	109	139	155	117	61	31	27	24	10	6
3	3	3	3	10	28	87	178	120	62	65	56	59	83	122	157	147	108	54	42	26	23	7	10

Date: Thursday, January 7, 2021					Total Daily Volume: 4645										Description: Westbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
8	8	11	15	52	112	232	334	301	264	260	281	303	286	326	403	426	390	229	134	109	83	42	36
3	0	2	3	4	13	49	69	77	88	82	75	81	104	78	76	102	93	62	34	29	22	15	9
3	2	1	0	11	19	51	67	75	56	57	69	78	57	76	102	127	125	58	41	31	30	8	13
1	3	4	6	13	28	59	80	75	55	62	72	77	63	88	113	96	91	54	27	22	12	10	7
1	3	4	6	24	52	73	118	74	65	59	65	67	62	84	112	101	81	55	32	27	19	9	7

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **N. Las Posas Road, between W. Mission Road and Armorlite Drive**

Date: **Thursday, January 7, 2021** Total Daily Volume: **15383** Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
65	47	28	47	130	258	519	1022	1016	765	807	942	989	1012	1150	1261	1346	1380	985	595	435	304	167	113
26	9	6	14	20	48	76	226	247	255	193	218	253	292	297	260	333	364	289	190	115	79	51	34
15	9	4	15	21	49	97	233	269	167	219	238	265	235	274	324	348	383	231	168	133	85	46	27
11	14	14	4	30	62	158	265	248	173	198	222	233	247	275	329	314	363	252	114	97	68	28	26
13	15	4	14	59	99	188	298	252	170	197	264	238	238	304	348	351	270	213	123	90	72	42	26

Date: **Thursday, January 7, 2021** Total Daily Volume: **7446** Description: **Northbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
36	22	13	10	32	49	130	362	429	303	320	416	468	482	599	680	759	829	549	344	260	195	99	60
13	6	3	1	6	4	13	79	84	89	78	101	117	130	154	148	177	214	149	111	78	49	26	19
12	5	4	5	6	12	15	97	117	67	81	99	116	115	130	153	203	243	138	95	76	56	27	10
5	5	6	1	4	11	36	69	110	69	81	92	121	105	146	182	195	210	150	65	52	46	22	17
6	6	0	3	16	22	66	117	118	78	80	124	114	132	169	197	184	162	112	73	54	44	24	14

Date: **Thursday, January 7, 2021** Total Daily Volume: **7937** Description: **Southbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
29	25	15	37	98	209	389	660	587	462	487	526	521	530	551	581	587	551	436	251	175	109	68	53
13	3	3	13	14	44	63	147	163	166	115	117	136	162	143	112	156	150	140	79	37	30	25	15
3	4	0	10	15	37	82	136	152	100	138	139	149	120	144	171	145	140	93	73	57	29	19	17
6	9	8	3	26	51	122	196	138	104	117	130	112	142	129	147	119	153	102	49	45	22	6	9
7	9	4	11	43	77	122	181	134	92	117	140	124	106	135	151	167	108	101	50	36	28	18	12

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **N. Las Posas Road, South of Armorlite Drive**

Date: Thursday, January 7, 2021					Total Daily Volume: 18723										Description: Total Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
105	116	107	110	177	335	692	1172	1137	1016	1058	1139	1220	1209	1402	1532	1495	1598	1168	722	491	347	205	170
40	16	21	21	24	54	106	266	276	289	272	277	285	337	334	323	391	443	345	217	134	97	64	41
24	22	30	20	36	68	140	269	312	233	276	267	321	295	321	377	377	416	284	202	136	95	48	45
22	39	32	37	56	83	205	309	276	242	254	271	320	287	356	427	376	414	279	146	115	75	45	49
19	39	24	32	61	130	241	328	273	252	256	324	294	290	391	405	351	325	260	157	106	80	48	35

Date: Thursday, January 7, 2021					Total Daily Volume: 9239										Description: Northbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
71	87	42	30	62	97	244	440	497	386	424	527	576	602	727	801	856	957	655	423	305	217	123	90
24	14	6	9	9	13	39	116	106	108	105	130	139	171	177	170	203	236	184	133	96	59	32	23
17	19	14	6	13	20	42	107	138	98	114	121	142	142	155	191	229	271	162	108	84	61	29	21
15	26	11	8	21	26	52	84	118	93	103	133	154	126	176	209	227	244	168	88	64	47	34	26
15	28	11	7	19	38	111	133	135	87	102	143	141	163	219	231	197	206	141	94	61	50	28	20

Date: Thursday, January 7, 2021					Total Daily Volume: 9484										Description: Southbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
34	29	65	80	115	238	448	732	640	630	634	612	644	607	675	731	639	641	513	299	186	130	82	80
16	2	15	12	15	41	67	150	170	181	167	147	146	166	157	153	188	207	161	84	38	38	32	18
7	3	16	14	23	48	98	162	174	135	162	146	179	153	166	186	148	145	122	94	52	34	19	24
7	13	21	29	35	57	153	225	158	149	151	138	166	161	180	218	149	170	111	58	51	28	11	23
4	11	13	25	42	92	130	195	138	165	154	181	153	127	172	174	154	119	119	63	45	30	20	15

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ATTACHMENT B

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – EXISTING

HCM Signalized Intersection Capacity Analysis

1: S Santa Fe Ave & N Rancho Santa Fe Rd

Existing AM
02/25/2021



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	211	172	223	406	5	648	295
Future Volume (vph)	211	172	223	406	5	648	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Lane Util. Factor	0.97	0.88	1.00	0.95	1.00	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	2787	1770	3539	1770	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	2787	1770	3539	1770	3539	1583
Peak-hour factor, PHF	0.87	0.87	0.88	0.88	0.86	0.86	0.86
Adj. Flow (vph)	243	198	253	461	6	753	343
RTOR Reduction (vph)	0	100	0	0	0	0	116
Lane Group Flow (vph)	243	98	253	461	6	753	227
Turn Type	Prot	pm+ov	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	5	5	2	1	6	4
Permitted Phases		4					6
Actuated Green, G (s)	13.2	34.1	20.9	78.1	1.4	59.4	72.6
Effective Green, g (s)	13.2	34.1	20.9	78.1	1.4	59.4	72.6
Actuated g/C Ratio	0.12	0.31	0.19	0.71	0.01	0.54	0.66
Clearance Time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	413	867	337	2524	22	1919	1049
v/s Ratio Prot	c0.07	0.02	c0.14	0.13	0.00	c0.21	0.03
v/s Ratio Perm		0.01					0.12
v/c Ratio	0.59	0.11	0.75	0.18	0.27	0.39	0.22
Uniform Delay, d1	45.6	26.9	41.8	5.2	53.5	14.6	7.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.1	9.1	0.2	6.6	0.6	0.1
Delay (s)	47.7	27.0	50.9	5.3	60.2	15.2	7.4
Level of Service	D	C	D	A	E	B	A
Approach Delay (s)	38.4			21.5		13.0	
Approach LOS	D			C		B	

Intersection Summary

HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
2: N. Las Posas Rd & W. Mission Rd

Existing AM
02/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑	↘	↗↘	↑↑		↗	↑↑	↗↘	↗↘	↑↑↘	
Traffic Volume (veh/h)	142	481	88	415	428	120	47	477	394	137	821	54
Future Volume (veh/h)	142	481	88	415	428	120	47	477	394	137	821	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1595	1595	1870	1870	1595	1595	1595	1870	1595	1870
Adj Flow Rate, veh/h	175	594	109	576	594	167	62	628	518	149	892	59
Peak Hour Factor	0.81	0.81	0.81	0.72	0.72	0.72	0.76	0.76	0.76	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	687	366	628	803	225	117	851	1175	311	1225	81
Arrive On Green	0.12	0.19	0.19	0.21	0.29	0.29	0.15	0.56	0.56	0.09	0.29	0.29
Sat Flow, veh/h	1781	3554	1351	2946	2740	769	1519	3030	2379	3456	4172	275
Grp Volume(v), veh/h	175	594	109	576	385	376	62	628	518	149	620	331
Grp Sat Flow(s),veh/h/ln	1781	1777	1351	1473	1777	1732	1519	1515	1189	1728	1451	1545
Q Serve(g_s), s	10.6	17.8	7.0	21.0	21.5	21.6	4.1	17.1	13.1	4.5	21.1	21.2
Cycle Q Clear(g_c), s	10.6	17.8	7.0	21.0	21.5	21.6	4.1	17.1	13.1	4.5	21.1	21.2
Prop In Lane	1.00		1.00	1.00		0.44	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	206	687	366	628	520	507	117	851	1175	311	852	454
V/C Ratio(X)	0.85	0.86	0.30	0.92	0.74	0.74	0.53	0.74	0.44	0.48	0.73	0.73
Avail Cap(c_a), veh/h	274	766	396	662	520	507	138	851	1175	314	852	454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	43.0	31.8	42.3	35.1	35.1	44.7	21.1	10.6	47.6	34.9	34.9
Incr Delay (d2), s/veh	17.2	9.4	0.5	17.3	5.5	5.8	3.6	5.6	1.2	1.1	5.4	9.9
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	5.5	8.4	2.3	8.8	9.6	9.5	1.6	4.7	2.4	1.9	7.7	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.0	52.4	32.3	59.6	40.6	40.9	48.2	26.7	11.8	48.7	40.3	44.9
LnGrp LOS	E	D	C	E	D	D	D	C	B	D	D	D
Approach Vol, veh/h		878			1337			1208			1100	
Approach Delay, s/veh		52.4			48.9			21.4			42.8	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	37.7	29.8	27.6	13.6	39.1	18.8	38.5				
Change Period (Y+Rc), s	5.1	6.8	6.3	6.3	5.1	6.8	* 6.1	* 6.3				
Max Green Setting (Gmax), s	10.0	27.1	24.7	23.7	10.0	27.1	* 17	* 32				
Max Q Clear Time (g_c+I1), s	6.5	19.1	23.0	19.8	6.1	23.2	12.6	23.6				
Green Ext Time (p_c), s	0.1	3.7	0.4	1.5	0.0	2.0	0.2	2.8				

Intersection Summary

HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: N. Las Posas Rd & Armormlite Dr

Existing AM
02/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↑↑↑		↶	↑↑↑	
Traffic Volume (veh/h)	3	1	24	118	6	49	25	518	109	46	715	13
Future Volume (veh/h)	3	1	24	118	6	49	25	518	109	46	715	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1	29	146	7	60	28	576	121	52	803	15
Peak Hour Factor	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	4	1	42	178	21	180	35	2656	548	67	3324	62
Arrive On Green	0.00	0.03	0.03	0.10	0.12	0.12	0.02	0.63	0.63	0.08	1.00	1.00
Sat Flow, veh/h	1781	53	1540	1781	168	1442	1781	4242	875	1781	5161	96
Grp Volume(v), veh/h	4	0	30	146	0	67	28	460	237	52	529	289
Grp Sat Flow(s),veh/h/ln	1781	0	1593	1781	0	1611	1781	1702	1713	1781	1702	1853
Q Serve(g_s), s	0.2	0.0	2.1	8.8	0.0	4.2	1.7	6.4	6.6	3.2	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	2.1	8.8	0.0	4.2	1.7	6.4	6.6	3.2	0.0	0.0
Prop In Lane	1.00		0.97	1.00		0.90	1.00		0.51	1.00		0.05
Lane Grp Cap(c), veh/h	4	0	43	178	0	201	35	2131	1072	67	2193	1194
V/C Ratio(X)	0.96	0.00	0.69	0.82	0.00	0.33	0.81	0.22	0.22	0.78	0.24	0.24
Avail Cap(c_a), veh/h	105	0	282	381	0	534	146	2131	1072	211	2193	1194
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.48	0.48	0.48
Uniform Delay (d), s/veh	54.9	0.0	53.0	48.5	0.0	43.9	53.7	8.9	8.9	50.4	0.0	0.0
Incr Delay (d2), s/veh	190.0	0.0	17.7	9.0	0.0	1.0	33.5	0.2	0.5	8.9	0.1	0.2
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	0.3	0.0	1.0	4.4	0.0	1.7	1.1	2.2	2.3	1.5	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	244.9	0.0	70.7	57.5	0.0	44.9	87.2	9.1	9.4	59.3	0.1	0.2
LnGrp LOS	F	A	E	E	A	D	F	A	A	E	A	A
Approach Vol, veh/h		34			213			725			870	
Approach Delay, s/veh		91.2			53.5			12.2			3.7	
Approach LOS		F			D			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.1	74.9	16.5	8.5	8.1	76.9	5.8	19.2				
Change Period (Y+Rc), s	6.0	6.0	5.5	5.5	6.0	6.0	5.5	5.5				
Max Green Setting (Gmax), s	13.0	31.0	23.5	19.5	9.0	35.0	6.5	36.5				
Max Q Clear Time (g_c+I1), s	5.2	8.6	10.8	4.1	3.7	2.0	2.2	6.2				
Green Ext Time (p_c), s	0.0	4.2	0.3	0.1	0.0	5.3	0.0	0.3				

Intersection Summary

HCM 6th Ctrl Delay	14.4
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary
4: W Mission Rd & Palomar College Dwy

Existing AM
02/25/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗		↙	↘
Traffic Volume (veh/h)	25	841	406	18	7	18
Future Volume (veh/h)	25	841	406	18	7	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	1001	534	24	9	24
Peak Hour Factor	0.84	0.84	0.76	0.76	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	68	2488	2141	96	351	313
Arrive On Green	0.04	0.70	0.62	0.62	0.20	0.20
Sat Flow, veh/h	1781	3647	3557	155	1781	1585
Grp Volume(v), veh/h	30	1001	274	284	9	24
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1842	1781	1585
Q Serve(g_s), s	1.8	12.9	7.6	7.7	0.4	1.4
Cycle Q Clear(g_c), s	1.8	12.9	7.6	7.7	0.4	1.4
Prop In Lane	1.00			0.08	1.00	1.00
Lane Grp Cap(c), veh/h	68	2488	1098	1139	351	313
V/C Ratio(X)	0.44	0.40	0.25	0.25	0.03	0.08
Avail Cap(c_a), veh/h	230	2488	1098	1139	351	313
HCM Platoon Ratio	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	1.00
Uniform Delay (d), s/veh	51.8	6.9	9.5	9.5	35.6	36.0
Incr Delay (d2), s/veh	4.4	0.5	0.5	0.5	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.1	2.8	2.9	0.2	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.2	7.4	10.0	10.0	35.8	36.5
LnGrp LOS	E	A	B	B	D	D
Approach Vol, veh/h		1031	558		33	
Approach Delay, s/veh		8.8	10.0		36.3	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		83.0		27.0	9.0	74.0
Change Period (Y+Rc), s		* 6		* 5.3	* 4.8	* 6
Max Green Setting (Gmax), s		* 77		* 22	* 14	* 58
Max Q Clear Time (g_c+I1), s		14.9		3.4	3.8	9.7
Green Ext Time (p_c), s		8.2		0.0	0.0	3.3

Intersection Summary

HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
 1: S Santa Fe Ave & N Rancho Santa Fe Rd

Existing PM
 02/25/2021



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	355	415	196	566	2	770	202
Future Volume (vph)	355	415	196	566	2	770	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Lane Util. Factor	0.97	0.88	1.00	0.95	1.00	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	2787	1770	3539	1770	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	2787	1770	3539	1770	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	382	446	213	615	2	928	243
RTOR Reduction (vph)	0	64	0	0	0	0	77
Lane Group Flow (vph)	382	382	213	615	2	928	166
Turn Type	Prot	pm+ov	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	5	5	2	1	6	4
Permitted Phases		4					6
Actuated Green, G (s)	17.7	36.4	18.7	73.9	1.1	57.1	74.8
Effective Green, g (s)	17.7	36.4	18.7	73.9	1.1	57.1	74.8
Actuated g/C Ratio	0.16	0.33	0.17	0.67	0.01	0.52	0.68
Clearance Time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	554	926	302	2388	17	1845	1081
v/s Ratio Prot	c0.11	0.07	c0.12	0.17	0.00	c0.26	0.02
v/s Ratio Perm		0.07					0.08
v/c Ratio	0.69	0.41	0.71	0.26	0.12	0.50	0.15
Uniform Delay, d1	43.3	28.3	42.8	7.0	53.7	17.0	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.3	7.3	0.3	3.1	1.0	0.1
Delay (s)	46.9	28.6	50.1	7.3	56.8	18.0	6.2
Level of Service	D	C	D	A	E	B	A
Approach Delay (s)	37.0			18.3		15.6	
Approach LOS	D			B		B	

Intersection Summary

HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
2: N. Las Posas Rd & W. Mission Rd

Existing PM
02/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	242	830	97	425	490	142	161	917	554	130	754	80
Future Volume (veh/h)	242	830	97	425	490	142	161	917	554	130	754	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1595	1595	1870	1870	1595	1595	1595	1870	1595	1870
Adj Flow Rate, veh/h	266	912	107	489	563	163	194	1105	667	140	811	86
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	804	497	421	591	171	214	1023	1142	310	1144	121
Arrive On Green	0.15	0.23	0.23	0.14	0.22	0.22	0.28	0.67	0.67	0.09	0.29	0.29
Sat Flow, veh/h	1781	3554	1351	2946	2721	785	1519	3030	2379	3456	3999	422
Grp Volume(v), veh/h	266	912	107	489	367	359	194	1105	667	140	587	310
Grp Sat Flow(s),veh/h/ln	1781	1777	1351	1473	1777	1729	1519	1515	1189	1728	1451	1519
Q Serve(g_s), s	16.3	24.9	6.0	15.7	22.4	22.6	13.5	37.1	17.9	4.2	19.9	20.1
Cycle Q Clear(g_c), s	16.3	24.9	6.0	15.7	22.4	22.6	13.5	37.1	17.9	4.2	19.9	20.1
Prop In Lane	1.00		1.00	1.00		0.45	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	274	804	497	421	386	376	214	1023	1142	310	830	434
V/C Ratio(X)	0.97	1.13	0.22	1.16	0.95	0.96	0.91	1.08	0.58	0.45	0.71	0.71
Avail Cap(c_a), veh/h	274	804	497	421	386	376	217	1023	1142	314	830	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.3	42.5	23.9	47.1	42.5	42.5	38.8	17.9	9.6	47.5	35.1	35.2
Incr Delay (d2), s/veh	46.5	75.3	0.2	96.5	33.2	34.9	32.7	50.8	1.9	1.0	5.0	9.6
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	10.5	18.8	1.9	11.2	13.0	12.9	6.1	12.2	2.6	1.8	7.3	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.8	117.9	24.1	143.6	75.7	77.4	71.5	68.7	11.5	48.5	40.2	44.8
LnGrp LOS	F	F	C	F	E	E	E	F	B	D	D	D
Approach Vol, veh/h		1285			1215			1966			1037	
Approach Delay, s/veh		104.9			103.5			49.5			42.7	
Approach LOS		F			F			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	44.0	22.0	31.2	20.6	38.3	23.0	30.2				
Change Period (Y+Rc), s	5.1	6.8	6.3	6.3	5.1	6.8	* 6.1	* 6.3				
Max Green Setting (Gmax), s	10.0	35.1	15.7	24.7	15.7	29.4	* 17	* 24				
Max Q Clear Time (g_c+I1), s	6.2	39.1	17.7	26.9	15.5	22.1	18.3	24.6				
Green Ext Time (p_c), s	0.1	0.0	0.0	0.0	0.0	3.1	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	73.1
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: N. Las Posas Rd & Armorldite Dr

Existing PM
02/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘		↗	↘		↗	↑↑↑		↗	↑↑↑	
Traffic Volume (veh/h)	10	1	0	186	0	74	17	1026	245	70	617	7
Future Volume (veh/h)	10	1	0	186	0	74	17	1026	245	70	617	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	15	1	0	286	0	114	18	1115	266	73	643	7
Peak Hour Factor	0.67	0.67	0.67	0.65	0.65	0.65	0.92	0.92	0.92	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	17	3	0	319	0	270	21	2299	548	93	3118	34
Arrive On Green	0.01	0.00	0.00	0.18	0.00	0.17	0.01	0.56	0.56	0.10	1.00	1.00
Sat Flow, veh/h	1781	1870	0	1781	0	1585	1781	4116	982	1781	5208	57
Grp Volume(v), veh/h	15	1	0	286	0	114	18	922	459	73	420	230
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1585	1781	1702	1694	1781	1702	1860
Q Serve(g_s), s	0.9	0.1	0.0	17.3	0.0	7.1	1.1	18.0	18.0	4.4	0.0	0.0
Cycle Q Clear(g_c), s	0.9	0.1	0.0	17.3	0.0	7.1	1.1	18.0	18.0	4.4	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.58	1.00		0.03
Lane Grp Cap(c), veh/h	17	3	0	319	0	270	21	1901	946	93	2038	1114
V/C Ratio(X)	0.86	0.39	0.00	0.90	0.00	0.42	0.84	0.48	0.49	0.79	0.21	0.21
Avail Cap(c_a), veh/h	66	306	0	397	0	553	87	1901	946	130	2038	1114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.39	0.39	0.39
Uniform Delay (d), s/veh	54.4	54.9	0.0	44.2	0.0	40.8	54.2	14.7	14.7	48.7	0.0	0.0
Incr Delay (d2), s/veh	66.9	76.3	0.0	19.5	0.0	1.0	55.3	0.9	1.8	8.1	0.1	0.2
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	0.7	0.1	0.0	9.3	0.0	2.8	0.8	6.5	6.7	2.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.2	131.2	0.0	63.7	0.0	41.8	109.5	15.6	16.5	56.8	0.1	0.2
LnGrp LOS	F	F	A	E	A	D	F	B	B	E	A	A
Approach Vol, veh/h		16			400			1399			723	
Approach Delay, s/veh		121.9			57.5			17.1			5.8	
Approach LOS		F			E			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	67.4	25.2	5.7	7.3	71.9	6.6	24.3				
Change Period (Y+Rc), s	6.0	6.0	5.5	5.5	6.0	6.0	5.5	5.5				
Max Green Setting (Gmax), s	8.0	36.5	24.5	18.0	5.4	39.1	4.1	38.4				
Max Q Clear Time (g_c+I1), s	6.4	20.0	19.3	2.1	3.1	2.0	2.9	9.1				
Green Ext Time (p_c), s	0.0	8.1	0.4	0.0	0.0	4.1	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay				20.9								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
4: W Mission Rd & Palomar College Dwy

Existing PM
02/25/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗		↙	↘
Traffic Volume (veh/h)	15	829	536	4	10	13
Future Volume (veh/h)	15	829	536	4	10	13
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	855	589	4	12	16
Peak Hour Factor	0.97	0.97	0.91	0.91	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	42	2488	2290	16	351	313
Arrive On Green	0.02	0.70	0.63	0.63	0.20	0.20
Sat Flow, veh/h	1781	3647	3712	25	1781	1585
Grp Volume(v), veh/h	15	855	289	304	12	16
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1866	1781	1585
Q Serve(g_s), s	0.9	10.5	7.8	7.9	0.6	0.9
Cycle Q Clear(g_c), s	0.9	10.5	7.8	7.9	0.6	0.9
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	42	2488	1125	1181	351	313
V/C Ratio(X)	0.36	0.34	0.26	0.26	0.03	0.05
Avail Cap(c_a), veh/h	214	2488	1125	1181	351	313
HCM Platoon Ratio	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	1.00
Uniform Delay (d), s/veh	52.9	6.5	8.8	8.9	35.7	35.8
Incr Delay (d2), s/veh	5.2	0.4	0.6	0.5	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.3	2.8	2.9	0.3	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.1	6.9	9.4	9.4	35.9	36.1
LnGrp LOS	E	A	A	A	D	D
Approach Vol, veh/h		870	593		28	
Approach Delay, s/veh		7.8	9.4		36.0	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		83.0		27.0	7.4	75.6
Change Period (Y+Rc), s		* 6		* 5.3	* 4.8	* 6
Max Green Setting (Gmax), s		* 77		* 22	* 13	* 59
Max Q Clear Time (g_c+I1), s		12.5		2.9	2.9	9.9
Green Ext Time (p_c), s		6.5		0.0	0.0	3.5

Intersection Summary

HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

ATTACHMENT C

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – NEAR TERM (YEAR 2025) WITHOUT PROJECT

HCM Signalized Intersection Capacity Analysis
 1: S Santa Fe Ave & N Rancho Santa Fe Rd

Near-Term (2025) AM
 02/25/2021



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	230	187	243	443	5	706	322
Future Volume (vph)	230	187	243	443	5	706	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Lane Util. Factor	0.97	0.88	1.00	0.95	1.00	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	2787	1770	3539	1770	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	2787	1770	3539	1770	3539	1583
Peak-hour factor, PHF	0.87	0.87	0.88	0.88	0.86	0.86	0.86
Adj. Flow (vph)	264	215	276	503	6	821	374
RTOR Reduction (vph)	0	76	0	0	0	0	110
Lane Group Flow (vph)	264	139	276	503	6	821	264
Turn Type	Prot	pm+ov	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	5	5	2	1	6	4
Permitted Phases		4					6
Actuated Green, G (s)	14.0	36.5	22.5	77.4	1.3	57.0	71.0
Effective Green, g (s)	14.0	36.5	22.5	77.4	1.3	57.0	71.0
Actuated g/C Ratio	0.13	0.33	0.21	0.71	0.01	0.52	0.65
Clearance Time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	438	929	363	2501	21	1842	1026
v/s Ratio Prot	c0.08	0.03	c0.16	0.14	0.00	c0.23	0.03
v/s Ratio Perm		0.02					0.13
v/c Ratio	0.60	0.15	0.76	0.20	0.29	0.45	0.26
Uniform Delay, d1	45.1	25.6	41.0	5.5	53.6	16.4	8.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.1	9.1	0.2	7.4	0.8	0.1
Delay (s)	47.5	25.7	50.0	5.7	61.0	17.2	8.3
Level of Service	D	C	D	A	E	B	A
Approach Delay (s)	37.7			21.4		14.6	
Approach LOS	D			C		B	

Intersection Summary

HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
 2: N. Las Posas Rd & W. Mission Rd

Near-Term (2025) AM
 02/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	524	96	452	467	131	51	520	429	149	895	59
Future Volume (veh/h)	155	524	96	452	467	131	51	520	429	149	895	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1595	1595	1870	1870	1595	1595	1595	1870	1595	1870
Adj Flow Rate, veh/h	191	647	119	628	649	182	67	684	564	162	973	64
Peak Hour Factor	0.81	0.81	0.81	0.72	0.72	0.72	0.76	0.76	0.76	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	726	383	662	839	235	120	782	1148	312	1124	74
Arrive On Green	0.12	0.20	0.20	0.22	0.31	0.31	0.16	0.52	0.52	0.09	0.27	0.27
Sat Flow, veh/h	1781	3554	1351	2946	2741	768	1519	3030	2379	3456	4174	274
Grp Volume(v), veh/h	191	647	119	628	420	411	67	684	564	162	676	361
Grp Sat Flow(s),veh/h/ln	1781	1777	1351	1473	1777	1732	1519	1515	1189	1728	1451	1545
Q Serve(g_s), s	11.6	19.5	7.6	23.1	23.7	23.7	4.5	21.9	16.7	4.9	24.4	24.5
Cycle Q Clear(g_c), s	11.6	19.5	7.6	23.1	23.7	23.7	4.5	21.9	16.7	4.9	24.4	24.5
Prop In Lane	1.00		1.00	1.00		0.44	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	222	726	383	662	544	530	120	782	1148	312	782	416
V/C Ratio(X)	0.86	0.89	0.31	0.95	0.77	0.77	0.56	0.87	0.49	0.52	0.86	0.87
Avail Cap(c_a), veh/h	274	766	398	662	544	530	138	782	1148	314	782	416
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	42.6	31.0	42.0	34.7	34.7	44.5	25.0	12.4	47.8	38.3	38.3
Incr Delay (d2), s/veh	20.2	12.3	0.5	23.2	6.8	7.0	3.9	12.7	1.5	1.5	12.3	20.9
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	6.2	9.5	2.4	10.2	10.8	10.5	1.7	6.4	2.9	2.1	9.6	11.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.4	54.9	31.4	65.2	41.5	41.7	48.4	37.7	13.9	49.2	50.5	59.2
LnGrp LOS	E	D	C	E	D	D	D	D	B	D	D	E
Approach Vol, veh/h		957			1459			1315			1199	
Approach Delay, s/veh		54.5			51.8			28.0			53.0	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	35.2	31.0	28.8	13.8	36.4	19.8	40.0				
Change Period (Y+Rc), s	5.1	6.8	6.3	6.3	5.1	6.8	* 6.1	* 6.3				
Max Green Setting (Gmax), s	10.0	27.1	24.7	23.7	10.0	27.1	* 17	* 32				
Max Q Clear Time (g_c+I1), s	6.9	23.9	25.1	21.5	6.5	26.5	13.6	25.7				
Green Ext Time (p_c), s	0.1	1.9	0.0	1.0	0.0	0.4	0.2	2.5				

Intersection Summary

HCM 6th Ctrl Delay	46.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 3: N. Las Posas Rd & Armormlite Dr

Near-Term (2025) AM
 02/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (veh/h)	3	1	26	129	7	53	27	565	119	50	779	14
Future Volume (veh/h)	3	1	26	129	7	53	27	565	119	50	779	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1	31	159	9	65	30	628	132	56	875	16
Peak Hour Factor	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	4	1	44	192	26	190	37	2605	539	72	3273	60
Arrive On Green	0.00	0.03	0.03	0.11	0.13	0.13	0.02	0.61	0.61	0.08	1.00	1.00
Sat Flow, veh/h	1781	50	1543	1781	196	1419	1781	4239	877	1781	5163	94
Grp Volume(v), veh/h	4	0	32	159	0	74	30	502	258	56	577	314
Grp Sat Flow(s),veh/h/ln	1781	0	1593	1781	0	1615	1781	1702	1712	1781	1702	1853
Q Serve(g_s), s	0.2	0.0	2.2	9.6	0.0	4.6	1.8	7.3	7.5	3.4	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	2.2	9.6	0.0	4.6	1.8	7.3	7.5	3.4	0.0	0.0
Prop In Lane	1.00		0.97	1.00		0.88	1.00		0.51	1.00		0.05
Lane Grp Cap(c), veh/h	4	0	45	192	0	216	37	2092	1052	72	2158	1175
V/C Ratio(X)	0.96	0.00	0.71	0.83	0.00	0.34	0.80	0.24	0.24	0.78	0.27	0.27
Avail Cap(c_a), veh/h	105	0	282	381	0	536	146	2092	1052	211	2158	1175
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.31	0.31	0.31
Uniform Delay (d), s/veh	54.9	0.0	53.0	48.1	0.0	43.3	53.6	9.6	9.6	50.1	0.0	0.0
Incr Delay (d2), s/veh	190.0	0.0	18.4	8.8	0.0	0.9	31.0	0.3	0.6	5.5	0.1	0.2
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	0.3	0.0	1.1	4.7	0.0	1.9	1.1	2.5	2.7	1.5	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	244.9	0.0	71.4	56.9	0.0	44.2	84.6	9.9	10.2	55.6	0.1	0.2
LnGrp LOS	F	A	E	E	A	D	F	A	B	E	A	A
Approach Vol, veh/h		36			233			790				947
Approach Delay, s/veh		90.6			52.9			12.8				3.4
Approach LOS		F			D			B				A
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	73.6	17.3	8.6	8.3	75.7	5.8	20.2				
Change Period (Y+Rc), s	6.0	6.0	5.5	5.5	6.0	6.0	5.5	5.5				
Max Green Setting (Gmax), s	13.0	31.0	23.5	19.5	9.0	35.0	6.5	36.5				
Max Q Clear Time (g_c+I1), s	5.4	9.5	11.6	4.2	3.8	2.0	2.2	6.6				
Green Ext Time (p_c), s	0.0	4.6	0.3	0.1	0.0	5.9	0.0	0.4				

Intersection Summary												
HCM 6th Ctrl Delay				14.4								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary
4: W Mission Rd & Palomar College Dwy

Near-Term (2025) AM
02/25/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↶↶	↶↶		↶	↶
Traffic Volume (veh/h)	27	917	443	20	8	20
Future Volume (veh/h)	27	917	443	20	8	20
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	32	1092	583	26	11	27
Peak Hour Factor	0.84	0.84	0.76	0.76	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	71	2488	2137	95	351	313
Arrive On Green	0.04	0.70	0.62	0.62	0.20	0.20
Sat Flow, veh/h	1781	3647	3559	154	1781	1585
Grp Volume(v), veh/h	32	1092	299	310	11	27
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1843	1781	1585
Q Serve(g_s), s	1.9	14.6	8.5	8.5	0.5	1.5
Cycle Q Clear(g_c), s	1.9	14.6	8.5	8.5	0.5	1.5
Prop In Lane	1.00			0.08	1.00	1.00
Lane Grp Cap(c), veh/h	71	2488	1096	1136	351	313
V/C Ratio(X)	0.45	0.44	0.27	0.27	0.03	0.09
Avail Cap(c_a), veh/h	230	2488	1096	1136	351	313
HCM Platoon Ratio	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	1.00
Uniform Delay (d), s/veh	51.6	7.1	9.7	9.7	35.7	36.1
Incr Delay (d2), s/veh	4.5	0.6	0.6	0.6	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.6	3.1	3.2	0.3	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.1	7.7	10.3	10.3	35.8	36.6
LnGrp LOS	E	A	B	B	D	D
Approach Vol, veh/h		1124	609		38	
Approach Delay, s/veh		9.1	10.3		36.4	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		83.0		27.0	9.2	73.8
Change Period (Y+Rc), s		* 6		* 5.3	* 4.8	* 6
Max Green Setting (Gmax), s		* 77		* 22	* 14	* 58
Max Q Clear Time (g_c+I1), s		16.6		3.5	3.9	10.5
Green Ext Time (p_c), s		9.3		0.1	0.0	3.6

Intersection Summary

HCM 6th Ctrl Delay	10.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
 1: S Santa Fe Ave & N Rancho Santa Fe Rd

Near-Term (Year 2025) PM
 02/25/2021



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	387	452	214	617	2	839	220
Future Volume (vph)	387	452	214	617	2	839	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Lane Util. Factor	0.97	0.88	1.00	0.95	1.00	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	2787	1770	3539	1770	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	2787	1770	3539	1770	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	416	486	233	671	2	1011	265
RTOR Reduction (vph)	0	47	0	0	0	0	87
Lane Group Flow (vph)	416	439	233	671	2	1011	178
Turn Type	Prot	pm+ov	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	5	5	2	1	6	4
Permitted Phases		4					6
Actuated Green, G (s)	18.5	38.3	19.8	73.1	1.1	55.2	73.7
Effective Green, g (s)	18.5	38.3	19.8	73.1	1.1	55.2	73.7
Actuated g/C Ratio	0.17	0.35	0.18	0.67	0.01	0.50	0.67
Clearance Time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	580	974	320	2362	17	1784	1065
v/s Ratio Prot	c0.12	0.08	c0.13	0.19	0.00	c0.29	0.03
v/s Ratio Perm		0.08					0.08
v/c Ratio	0.72	0.45	0.73	0.28	0.12	0.57	0.17
Uniform Delay, d1	43.0	27.5	42.3	7.5	53.7	18.8	6.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	0.3	8.0	0.3	3.1	1.3	0.1
Delay (s)	47.2	27.8	50.3	7.8	56.8	20.2	6.7
Level of Service	D	C	D	A	E	C	A
Approach Delay (s)	36.8			18.7		17.4	
Approach LOS	D			B		B	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
2: N. Las Posas Rd & W. Mission Rd

Near-Term (Year 2025) PM
02/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘	↑↑	↗↘	↘↗	↑↑↗	
Traffic Volume (veh/h)	264	905	106	463	534	155	175	1000	604	142	822	87
Future Volume (veh/h)	264	905	106	463	534	155	175	1000	604	142	822	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1595	1595	1870	1870	1595	1595	1595	1870	1595	1870
Adj Flow Rate, veh/h	290	995	116	532	614	178	211	1205	728	153	884	94
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	804	499	421	591	171	217	1151	1243	311	1308	139
Arrive On Green	0.15	0.23	0.23	0.14	0.22	0.22	0.29	0.76	0.76	0.09	0.33	0.33
Sat Flow, veh/h	1781	3554	1351	2946	2719	787	1519	3030	2379	3456	3997	423
Grp Volume(v), veh/h	290	995	116	532	401	391	211	1205	728	153	641	337
Grp Sat Flow(s),veh/h/ln	1781	1777	1351	1473	1777	1729	1519	1515	1189	1728	1451	1519
Q Serve(g_s), s	16.9	24.9	6.5	15.7	23.9	23.9	15.1	41.8	16.0	4.6	21.0	21.1
Cycle Q Clear(g_c), s	16.9	24.9	6.5	15.7	23.9	23.9	15.1	41.8	16.0	4.6	21.0	21.1
Prop In Lane	1.00		1.00	1.00		0.46	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	274	804	499	421	386	376	217	1151	1243	311	950	497
V/C Ratio(X)	1.06	1.24	0.23	1.27	1.04	1.04	0.97	1.05	0.59	0.49	0.67	0.68
Avail Cap(c_a), veh/h	274	804	499	421	386	376	217	1151	1243	314	950	497
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.81	0.81	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	42.5	23.9	47.1	43.1	43.1	39.1	13.2	6.3	47.6	31.9	32.0
Incr Delay (d2), s/veh	71.0	117.2	0.2	137.0	56.1	57.6	47.5	37.1	1.6	1.2	3.8	7.3
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	12.6	23.5	2.0	13.5	16.1	15.8	7.4	10.0	2.0	2.0	7.5	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	117.6	159.8	24.2	184.2	99.2	100.6	86.6	50.3	8.0	48.9	35.8	39.3
LnGrp LOS	F	F	C	F	F	F	F	F	A	D	D	D
Approach Vol, veh/h		1401			1324			2144			1131	
Approach Delay, s/veh		139.8			133.8			39.5			38.6	
Approach LOS		F			F			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	48.8	22.0	31.2	20.8	43.0	23.0	30.2				
Change Period (Y+Rc), s	5.1	6.8	6.3	6.3	5.1	6.8	* 6.1	* 6.3				
Max Green Setting (Gmax), s	10.0	35.1	15.7	24.7	15.7	29.4	* 17	* 24				
Max Q Clear Time (g_c+I1), s	6.6	43.8	17.7	26.9	17.1	23.1	18.9	25.9				
Green Ext Time (p_c), s	0.1	0.0	0.0	0.0	0.0	3.0	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	83.6
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: N. Las Posas Rd & Armormlite Dr

Near-Term (Year 2025) PM
02/25/2021



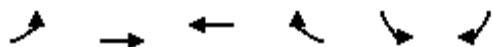
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷↷↷		↶	↷↷↷	
Traffic Volume (veh/h)	11	1	0	203	0	81	19	1118	267	76	673	8
Future Volume (veh/h)	11	1	0	203	0	81	19	1118	267	76	673	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	16	1	0	312	0	125	21	1215	290	79	701	8
Peak Hour Factor	0.67	0.67	0.67	0.65	0.65	0.65	0.92	0.92	0.92	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	19	3	0	343	0	291	25	2226	531	100	3032	35
Arrive On Green	0.01	0.00	0.00	0.19	0.00	0.18	0.01	0.54	0.54	0.11	1.00	1.00
Sat Flow, veh/h	1781	1870	0	1781	0	1585	1781	4115	982	1781	5204	59
Grp Volume(v), veh/h	16	1	0	312	0	125	21	1005	500	79	458	251
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1585	1781	1702	1694	1781	1702	1860
Q Serve(g_s), s	1.0	0.1	0.0	18.9	0.0	7.7	1.3	21.2	21.2	4.8	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.1	0.0	18.9	0.0	7.7	1.3	21.2	21.2	4.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.58	1.00		0.03
Lane Grp Cap(c), veh/h	19	3	0	343	0	291	25	1841	916	100	1983	1083
V/C Ratio(X)	0.86	0.39	0.00	0.91	0.00	0.43	0.83	0.55	0.55	0.79	0.23	0.23
Avail Cap(c_a), veh/h	66	306	0	397	0	553	87	1841	916	130	1983	1083
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.23	0.23	0.23
Uniform Delay (d), s/veh	54.3	54.9	0.0	43.5	0.0	39.8	54.1	16.5	16.5	48.2	0.0	0.0
Incr Delay (d2), s/veh	62.6	76.3	0.0	22.5	0.0	1.0	46.8	1.2	2.3	5.8	0.1	0.1
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	0.8	0.1	0.0	10.4	0.0	3.1	0.9	7.8	8.0	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	117.0	131.2	0.0	65.9	0.0	40.8	100.9	17.6	18.8	54.0	0.1	0.1
LnGrp LOS	F	F	A	E	A	D	F	B	B	D	A	A
Approach Vol, veh/h		17			437			1526			788	
Approach Delay, s/veh		117.8			58.7			19.2			5.5	
Approach LOS		F			E			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.2	65.5	26.7	5.7	7.6	70.1	6.7	25.7				
Change Period (Y+Rc), s	6.0	6.0	5.5	5.5	6.0	6.0	5.5	5.5				
Max Green Setting (Gmax), s	8.0	36.5	24.5	18.0	5.4	39.1	4.1	38.4				
Max Q Clear Time (g_c+I1), s	6.8	23.2	20.9	2.1	3.3	2.0	3.0	9.7				
Green Ext Time (p_c), s	0.0	7.7	0.3	0.0	0.0	4.5	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	22.1
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
4: W Mission Rd & Palomar College Dwy

Near-Term (Year 2025) PM
02/25/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↶↶	↶↶		↶	↶
Traffic Volume (veh/h)	16	904	584	4	11	14
Future Volume (veh/h)	16	904	584	4	11	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	932	642	4	14	18
Peak Hour Factor	0.97	0.97	0.91	0.91	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	44	2488	2287	14	351	313
Arrive On Green	0.02	0.70	0.63	0.63	0.20	0.20
Sat Flow, veh/h	1781	3647	3714	23	1781	1585
Grp Volume(v), veh/h	16	932	315	331	14	18
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1866	1781	1585
Q Serve(g_s), s	1.0	11.7	8.7	8.7	0.7	1.0
Cycle Q Clear(g_c), s	1.0	11.7	8.7	8.7	0.7	1.0
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	44	2488	1123	1179	351	313
V/C Ratio(X)	0.37	0.37	0.28	0.28	0.04	0.06
Avail Cap(c_a), veh/h	214	2488	1123	1179	351	313
HCM Platoon Ratio	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	1.00
Uniform Delay (d), s/veh	52.8	6.7	9.1	9.1	35.7	35.8
Incr Delay (d2), s/veh	5.0	0.4	0.6	0.6	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.7	3.1	3.3	0.3	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	57.8	7.1	9.7	9.7	35.9	36.2
LnGrp LOS	E	A	A	A	D	D
Approach Vol, veh/h		948	646		32	
Approach Delay, s/veh		8.0	9.7		36.1	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		83.0		27.0	7.5	75.5
Change Period (Y+Rc), s		* 6		* 5.3	* 4.8	* 6
Max Green Setting (Gmax), s		* 77		* 22	* 13	* 59
Max Q Clear Time (g_c+I1), s		13.7		3.0	3.0	10.7
Green Ext Time (p_c), s		7.4		0.0	0.0	3.9

Intersection Summary

HCM 6th Ctrl Delay	9.2
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX D

PEAK HOUR INTERSECTION ANALYSIS WORKSHEET – NEAR TERM (YEAR 2025) + PROJECT

HCM Signalized Intersection Capacity Analysis
 1: S Santa Fe Ave & N Rancho Santa Fe Rd

Near-Term (2025) + P AM
 03/01/2021



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	230	194	250	450	5	713	322
Future Volume (vph)	230	194	250	450	5	713	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Lane Util. Factor	0.97	0.88	1.00	0.95	1.00	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	2787	1770	3539	1770	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	2787	1770	3539	1770	3539	1583
Peak-hour factor, PHF	0.87	0.87	0.88	0.88	0.86	0.86	0.86
Adj. Flow (vph)	264	223	284	511	6	829	374
RTOR Reduction (vph)	0	73	0	0	0	0	108
Lane Group Flow (vph)	264	150	284	511	6	829	266
Turn Type	Prot	pm+ov	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	5	5	2	1	6	4
Permitted Phases		4					6
Actuated Green, G (s)	14.0	36.9	22.9	77.4	1.3	56.6	70.6
Effective Green, g (s)	14.0	36.9	22.9	77.4	1.3	56.6	70.6
Actuated g/C Ratio	0.13	0.34	0.21	0.71	0.01	0.52	0.64
Clearance Time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	438	939	370	2501	21	1829	1020
v/s Ratio Prot	c0.08	0.03	c0.16	0.14	0.00	c0.23	0.03
v/s Ratio Perm		0.02					0.13
v/c Ratio	0.60	0.16	0.77	0.20	0.29	0.45	0.26
Uniform Delay, d1	45.1	25.4	40.8	5.5	53.6	16.7	8.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.1	9.2	0.2	7.4	0.8	0.1
Delay (s)	47.5	25.5	50.0	5.7	61.0	17.5	8.4
Level of Service	D	C	D	A	E	B	A
Approach Delay (s)	37.4			21.5		14.9	
Approach LOS	D			C		B	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
 2: N. Las Posas Rd & W. Mission Rd

Near-Term (2025) + P AM
 03/01/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘	↑↑	↗↘	↘↗	↑↑↗	
Traffic Volume (veh/h)	155	524	116	475	467	131	88	527	452	149	902	59
Future Volume (veh/h)	155	524	116	475	467	131	88	527	452	149	902	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1595	1595	1870	1870	1595	1595	1595	1870	1595	1870
Adj Flow Rate, veh/h	191	647	143	660	649	182	116	693	595	162	980	64
Peak Hour Factor	0.81	0.81	0.81	0.72	0.72	0.72	0.76	0.76	0.76	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	682	381	691	834	234	137	790	1178	312	1090	71
Arrive On Green	0.12	0.19	0.19	0.23	0.30	0.30	0.15	0.44	0.44	0.09	0.26	0.26
Sat Flow, veh/h	1781	3554	1351	2946	2741	768	1519	3030	2379	3456	4176	272
Grp Volume(v), veh/h	191	647	143	660	420	411	116	693	595	162	681	363
Grp Sat Flow(s),veh/h/ln	1781	1777	1351	1473	1777	1732	1519	1515	1189	1728	1451	1546
Q Serve(g_s), s	11.6	19.8	9.3	24.3	23.7	23.8	8.2	23.0	18.2	4.9	24.9	25.0
Cycle Q Clear(g_c), s	11.6	19.8	9.3	24.3	23.7	23.8	8.2	23.0	18.2	4.9	24.9	25.0
Prop In Lane	1.00		1.00	1.00		0.44	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	221	682	381	691	540	527	137	790	1178	312	758	403
V/C Ratio(X)	0.86	0.95	0.38	0.96	0.78	0.78	0.85	0.88	0.51	0.52	0.90	0.90
Avail Cap(c_a), veh/h	261	682	381	691	540	527	139	790	1178	314	758	403
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.3	43.9	31.7	41.5	34.9	34.9	46.0	29.5	14.2	47.8	39.2	39.3
Incr Delay (d2), s/veh	22.1	22.7	0.6	23.7	7.1	7.4	35.0	12.8	1.5	1.5	15.7	25.7
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	6.3	10.5	3.0	10.7	10.8	10.6	4.2	7.7	3.6	2.1	10.1	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	66.7	32.3	65.2	42.0	42.3	81.0	42.3	15.7	49.2	54.9	65.0
LnGrp LOS	E	E	C	E	D	D	F	D	B	D	D	E
Approach Vol, veh/h		981			1491			1404			1206	
Approach Delay, s/veh		62.2			52.4			34.2			57.2	
Approach LOS		E			D			C			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	35.5	32.1	27.4	15.0	35.5	19.8	39.7				
Change Period (Y+Rc), s	5.1	6.8	6.3	6.3	5.1	6.8	* 6.1	* 6.3				
Max Green Setting (Gmax), s	10.0	28.6	25.8	21.1	10.1	28.5	* 16	* 31				
Max Q Clear Time (g_c+I1), s	6.9	25.0	26.3	21.8	10.2	27.0	13.6	25.8				
Green Ext Time (p_c), s	0.1	2.2	0.0	0.0	0.0	0.9	0.1	2.3				

Intersection Summary

HCM 6th Ctrl Delay	50.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 3: N. Las Posas Rd & Armorldite Dr

Near-Term (2025) + P AM

03/01/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (veh/h)	3	1	26	129	7	56	27	578	119	104	792	14
Future Volume (veh/h)	3	1	26	129	7	56	27	578	119	104	792	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1	31	159	9	69	30	642	132	117	890	16
Peak Hour Factor	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	4	1	44	192	25	191	37	2447	496	143	3274	59
Arrive On Green	0.00	0.03	0.03	0.11	0.13	0.13	0.02	0.57	0.57	0.16	1.00	1.00
Sat Flow, veh/h	1781	50	1543	1781	186	1427	1781	4257	862	1781	5165	93
Grp Volume(v), veh/h	4	0	32	159	0	78	30	511	263	117	586	320
Grp Sat Flow(s),veh/h/ln	1781	0	1593	1781	0	1613	1781	1702	1715	1781	1702	1854
Q Serve(g_s), s	0.2	0.0	2.2	9.6	0.0	4.8	1.8	8.3	8.5	7.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	2.2	9.6	0.0	4.8	1.8	8.3	8.5	7.0	0.0	0.0
Prop In Lane	1.00		0.97	1.00		0.88	1.00		0.50	1.00		0.05
Lane Grp Cap(c), veh/h	4	0	45	192	0	216	37	1957	986	143	2158	1175
V/C Ratio(X)	0.96	0.00	0.71	0.83	0.00	0.36	0.80	0.26	0.27	0.82	0.27	0.27
Avail Cap(c_a), veh/h	105	0	282	381	0	535	146	1957	986	211	2158	1175
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Uniform Delay (d), s/veh	54.9	0.0	53.0	48.1	0.0	43.4	53.6	11.7	11.7	45.4	0.0	0.0
Incr Delay (d2), s/veh	190.0	0.0	18.4	8.8	0.0	1.0	31.0	0.3	0.7	5.4	0.1	0.2
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	0.3	0.0	1.1	4.7	0.0	2.0	1.1	2.9	3.1	3.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	244.9	0.0	71.4	56.9	0.0	44.4	84.6	12.0	12.4	50.8	0.1	0.2
LnGrp LOS	F	A	E	E	A	D	F	B	B	D	A	A
Approach Vol, veh/h		36			237			804			1023	
Approach Delay, s/veh		90.6			52.8			14.9			5.9	
Approach LOS		F			D			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.8	69.2	17.3	8.6	8.3	75.7	5.8	20.2				
Change Period (Y+Rc), s	6.0	6.0	5.5	5.5	6.0	6.0	5.5	5.5				
Max Green Setting (Gmax), s	13.0	31.0	23.5	19.5	9.0	35.0	6.5	36.5				
Max Q Clear Time (g_c+I1), s	9.0	10.5	11.6	4.2	3.8	2.0	2.2	6.8				
Green Ext Time (p_c), s	0.1	4.6	0.3	0.1	0.0	6.0	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	16.1
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary
4: W Mission Rd & Palomar College Dwy

Near-Term (2025) + P AM
03/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗		↙	↘
Traffic Volume (veh/h)	30	937	463	20	8	23
Future Volume (veh/h)	30	937	463	20	8	23
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	1115	609	26	11	31
Peak Hour Factor	0.84	0.84	0.76	0.76	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	76	2488	2132	91	351	313
Arrive On Green	0.04	0.70	0.61	0.61	0.20	0.20
Sat Flow, veh/h	1781	3647	3566	148	1781	1585
Grp Volume(v), veh/h	36	1115	311	324	11	31
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1844	1781	1585
Q Serve(g_s), s	2.2	15.1	9.0	9.0	0.5	1.8
Cycle Q Clear(g_c), s	2.2	15.1	9.0	9.0	0.5	1.8
Prop In Lane	1.00			0.08	1.00	1.00
Lane Grp Cap(c), veh/h	76	2488	1091	1132	351	313
V/C Ratio(X)	0.48	0.45	0.29	0.29	0.03	0.10
Avail Cap(c_a), veh/h	230	2488	1091	1132	351	313
HCM Platoon Ratio	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	1.00
Uniform Delay (d), s/veh	51.5	7.2	9.9	9.9	35.7	36.1
Incr Delay (d2), s/veh	4.6	0.6	0.7	0.6	0.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	4.7	3.3	3.4	0.3	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.1	7.8	10.6	10.6	35.8	36.8
LnGrp LOS	E	A	B	B	D	D
Approach Vol, veh/h		1151	635		42	
Approach Delay, s/veh		9.3	10.6		36.5	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		83.0		27.0	9.5	73.5
Change Period (Y+Rc), s		* 6		* 5.3	* 4.8	* 6
Max Green Setting (Gmax), s		* 77		* 22	* 14	* 58
Max Q Clear Time (g_c+I1), s		17.1		3.8	4.2	11.0
Green Ext Time (p_c), s		9.6		0.1	0.0	3.8

Intersection Summary

HCM 6th Ctrl Delay	10.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
 1: S Santa Fe Ave & N Rancho Santa Fe Rd

Near-Term (Year 2025) +P PM
 03/01/2021



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	387	460	221	624	0	847	220
Future Volume (vph)	387	460	221	624	0	847	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	4.5	4.5	5.8		5.0	6.5
Lane Util. Factor	0.97	0.88	1.00	0.95		0.95	1.00
Frt	1.00	0.85	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00		1.00	1.00
Satd. Flow (prot)	3433	2787	1770	3539		3539	1583
Flt Permitted	0.95	1.00	0.95	1.00		1.00	1.00
Satd. Flow (perm)	3433	2787	1770	3539		3539	1583
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	416	495	240	678	0	1020	265
RTOR Reduction (vph)	0	45	0	0	0	0	87
Lane Group Flow (vph)	416	450	240	678	0	1020	178
Turn Type	Prot	pm+ov	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	5	5	2	1	6	4
Permitted Phases		4					6
Actuated Green, G (s)	18.5	38.6	20.1	78.7		54.9	73.4
Effective Green, g (s)	18.5	38.6	20.1	78.7		54.9	73.4
Actuated g/C Ratio	0.17	0.35	0.18	0.72		0.50	0.67
Clearance Time (s)	6.5	4.5	4.5	5.8		5.0	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	580	982	324	2543		1774	1061
v/s Ratio Prot	c0.12	0.08	c0.14	0.19		c0.29	0.03
v/s Ratio Perm		0.08					0.08
v/c Ratio	0.72	0.46	0.74	0.27		0.57	0.17
Uniform Delay, d1	43.0	27.4	42.2	5.4		19.1	6.7
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.2	0.3	8.8	0.3		1.4	0.1
Delay (s)	47.2	27.7	51.0	5.6		20.5	6.8
Level of Service	D	C	D	A		C	A
Approach Delay (s)	36.6			17.5		17.7	
Approach LOS	D			B		B	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
 2: N. Las Posas Rd & W. Mission Rd

Near-Term (Year 2025) +P PM

03/01/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	264	905	129	490	534	155	216	1007	630	142	830	87
Future Volume (veh/h)	264	905	129	490	534	155	216	1007	630	142	830	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1595	1595	1870	1870	1595	1595	1595	1870	1595	1870
Adj Flow Rate, veh/h	290	995	142	563	614	178	260	1213	759	153	892	94
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	309	804	518	490	601	174	239	1080	1243	311	1157	121
Arrive On Green	0.17	0.23	0.23	0.17	0.22	0.22	0.31	0.71	0.71	0.09	0.29	0.29
Sat Flow, veh/h	1781	3554	1351	2946	2719	787	1519	3030	2379	3456	4001	420
Grp Volume(v), veh/h	290	995	142	563	401	391	260	1213	759	153	646	340
Grp Sat Flow(s),veh/h/ln	1781	1777	1351	1473	1777	1729	1519	1515	1189	1728	1451	1519
Q Serve(g_s), s	17.7	24.9	8.0	18.3	24.3	24.3	17.3	39.2	20.7	4.6	22.4	22.5
Cycle Q Clear(g_c), s	17.7	24.9	8.0	18.3	24.3	24.3	17.3	39.2	20.7	4.6	22.4	22.5
Prop In Lane	1.00		1.00	1.00		0.46	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	309	804	518	490	393	382	239	1080	1243	311	839	439
V/C Ratio(X)	0.94	1.24	0.27	1.15	1.02	1.02	1.09	1.12	0.61	0.49	0.77	0.77
Avail Cap(c_a), veh/h	309	804	518	490	393	382	239	1080	1243	314	839	439
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.70	0.70	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	42.5	23.3	45.9	42.9	42.9	37.7	15.8	7.8	47.6	35.8	35.8
Incr Delay (d2), s/veh	35.1	117.2	0.3	88.3	51.0	52.3	74.5	64.7	1.6	1.2	6.7	12.5
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	10.5	23.5	0.0	12.5	15.8	15.5	9.9	14.3	2.5	2.0	8.3	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.9	159.8	23.6	134.2	93.8	95.2	112.2	80.5	9.4	48.9	42.5	48.3
LnGrp LOS	E	F	C	F	F	F	F	F	A	D	D	D
Approach Vol, veh/h		1427			1355			2232			1139	
Approach Delay, s/veh		130.0			111.0			60.0			45.1	
Approach LOS		F			F			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	46.2	24.6	31.2	22.4	38.8	25.2	30.6				
Change Period (Y+Rc), s	5.1	6.8	6.3	6.3	5.1	6.8	* 6.1	* 6.3				
Max Green Setting (Gmax), s	10.0	32.5	18.3	24.7	17.3	25.2	* 19	* 24				
Max Q Clear Time (g_c+I1), s	6.6	41.2	20.3	26.9	19.3	24.5	19.7	26.3				
Green Ext Time (p_c), s	0.1	0.0	0.0	0.0	0.0	0.4	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	84.7
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 3: N. Las Posas Rd & Armormlite Dr

Near-Term (Year 2025) +P PM

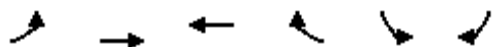
03/01/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1	0	203	0	85	19	1133	267	135	688	8
Future Volume (veh/h)	11	1	0	203	0	85	19	1133	267	135	688	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	16	1	0	312	0	131	21	1232	290	141	717	8
Peak Hour Factor	0.67	0.67	0.67	0.65	0.65	0.65	0.92	0.92	0.92	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	19	3	0	343	0	291	25	2163	509	130	3033	34
Arrive On Green	0.01	0.00	0.00	0.19	0.00	0.18	0.01	0.52	0.52	0.15	1.00	1.00
Sat Flow, veh/h	1781	1870	0	1781	0	1585	1781	4128	972	1781	5206	58
Grp Volume(v), veh/h	16	1	0	312	0	131	21	1016	506	141	469	256
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1585	1781	1702	1695	1781	1702	1860
Q Serve(g_s), s	1.0	0.1	0.0	18.9	0.0	8.1	1.3	22.3	22.3	8.0	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.1	0.0	18.9	0.0	8.1	1.3	22.3	22.3	8.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.57	1.00		0.03
Lane Grp Cap(c), veh/h	19	3	0	343	0	291	25	1784	889	130	1983	1084
V/C Ratio(X)	0.86	0.39	0.00	0.91	0.00	0.45	0.83	0.57	0.57	1.09	0.24	0.24
Avail Cap(c_a), veh/h	66	306	0	397	0	553	87	1784	889	130	1983	1084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.13	0.13	0.13
Uniform Delay (d), s/veh	54.3	54.9	0.0	43.5	0.0	40.0	54.1	17.8	17.8	47.0	0.0	0.0
Incr Delay (d2), s/veh	62.6	76.3	0.0	22.5	0.0	1.1	46.8	1.3	2.6	55.7	0.0	0.1
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	0.8	0.1	0.0	10.4	0.0	3.2	0.9	8.3	8.6	5.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	117.0	131.2	0.0	65.9	0.0	41.0	100.9	19.1	20.4	102.7	0.0	0.1
LnGrp LOS	F	F	A	E	A	D	F	B	C	F	A	A
Approach Vol, veh/h		17			443			1543				866
Approach Delay, s/veh		117.8			58.6			20.6				16.8
Approach LOS		F			E			C				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	63.6	26.7	5.7	7.6	70.1	6.7	25.7				
Change Period (Y+Rc), s	6.0	6.0	5.5	5.5	6.0	6.0	5.5	5.5				
Max Green Setting (Gmax), s	8.0	36.5	24.5	18.0	5.4	39.1	4.1	38.4				
Max Q Clear Time (g_c+I1), s	10.0	24.3	20.9	2.1	3.3	2.0	3.0	10.1				
Green Ext Time (p_c), s	0.0	7.3	0.3	0.0	0.0	4.7	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay				25.9								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
4: W Mission Rd & Palomar College Dwy

Near-Term (Year 2025) +P PM
03/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↶		↶	↷
Traffic Volume (veh/h)	20	926	607	4	11	18
Future Volume (veh/h)	20	926	607	4	11	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	955	667	4	14	22
Peak Hour Factor	0.97	0.97	0.91	0.91	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	54	2488	2268	14	351	313
Arrive On Green	0.03	0.70	0.63	0.63	0.20	0.20
Sat Flow, veh/h	1781	3647	3715	22	1781	1585
Grp Volume(v), veh/h	21	955	327	344	14	22
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1866	1781	1585
Q Serve(g_s), s	1.3	12.1	9.3	9.3	0.7	1.2
Cycle Q Clear(g_c), s	1.3	12.1	9.3	9.3	0.7	1.2
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	54	2488	1113	1169	351	313
V/C Ratio(X)	0.39	0.38	0.29	0.29	0.04	0.07
Avail Cap(c_a), veh/h	214	2488	1113	1169	351	313
HCM Platoon Ratio	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	1.00
Uniform Delay (d), s/veh	52.4	6.8	9.4	9.4	35.7	35.9
Incr Delay (d2), s/veh	4.6	0.5	0.7	0.6	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.8	3.4	3.5	0.3	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.9	7.2	10.1	10.1	35.9	36.4
LnGrp LOS	E	A	B	B	D	D
Approach Vol, veh/h		976	671		36	
Approach Delay, s/veh		8.3	10.1		36.2	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		83.0		27.0	8.1	74.9
Change Period (Y+Rc), s		* 6		* 5.3	* 4.8	* 6
Max Green Setting (Gmax), s		* 77		* 22	* 13	* 59
Max Q Clear Time (g_c+I1), s		14.1		3.2	3.3	11.3
Green Ext Time (p_c), s		7.6		0.1	0.0	4.0

Intersection Summary

HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX E

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – YEAR 2050 WITHOUT PROJECT

HCM Signalized Intersection Capacity Analysis
 1: S Santa Fe Ave & N Rancho Santa Fe Rd

Year 2050 AM
 02/25/2021



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	280	300	390	700	10	1120	390
Future Volume (vph)	280	300	390	700	10	1120	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Lane Util. Factor	0.97	0.88	1.00	0.95	1.00	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	2787	1770	3539	1770	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	2787	1770	3539	1770	3539	1583
Peak-hour factor, PHF	0.87	0.87	0.88	0.88	0.86	0.86	0.86
Adj. Flow (vph)	322	345	443	795	12	1302	453
RTOR Reduction (vph)	0	11	0	0	0	0	62
Lane Group Flow (vph)	322	334	443	795	12	1302	391
Turn Type	Prot	pm+ov	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	5	5	2	1	6	4
Permitted Phases		4					6
Actuated Green, G (s)	15.8	46.6	30.8	75.9	1.0	46.9	62.7
Effective Green, g (s)	15.8	46.6	30.8	75.9	1.0	46.9	62.7
Actuated g/C Ratio	0.14	0.43	0.28	0.69	0.01	0.43	0.57
Clearance Time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	495	1186	497	2453	16	1515	906
v/s Ratio Prot	c0.09	0.08	c0.25	0.22	0.01	c0.37	0.06
v/s Ratio Perm		0.04					0.18
v/c Ratio	0.65	0.28	0.89	0.32	0.75	0.86	0.43
Uniform Delay, d1	44.2	20.5	37.7	6.6	54.1	28.3	13.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.1	17.9	0.4	106.0	6.6	0.3
Delay (s)	47.3	20.7	55.7	7.0	160.1	34.9	13.6
Level of Service	D	C	E	A	F	C	B
Approach Delay (s)	33.5			24.4		30.3	
Approach LOS	C			C		C	

Intersection Summary

HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
 2: N. Las Posas Rd & W. Mission Rd

Year 2050 AM
 02/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘	↑↑	↗↘	↘↗	↑↑↗	
Traffic Volume (veh/h)	210	670	130	450	590	120	70	530	420	140	920	80
Future Volume (veh/h)	210	670	130	450	590	120	70	530	420	140	920	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1595	1595	1870	1870	1595	1595	1595	1870	1595	1870
Adj Flow Rate, veh/h	259	827	160	625	819	167	92	697	553	152	1000	87
Peak Hour Factor	0.81	0.81	0.81	0.72	0.72	0.72	0.76	0.76	0.76	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	772	409	662	853	174	130	841	1194	311	1151	100
Arrive On Green	0.15	0.22	0.22	0.22	0.29	0.29	0.17	0.56	0.56	0.09	0.28	0.28
Sat Flow, veh/h	1781	3554	1351	2946	2940	599	1519	3030	2379	3456	4079	354
Grp Volume(v), veh/h	259	827	160	625	495	491	92	697	553	152	711	376
Grp Sat Flow(s),veh/h/ln	1781	1777	1351	1473	1777	1762	1519	1515	1189	1728	1451	1531
Q Serve(g_s), s	15.8	23.9	10.3	23.0	30.2	30.2	6.3	20.9	14.7	4.6	25.6	25.7
Cycle Q Clear(g_c), s	15.8	23.9	10.3	23.0	30.2	30.2	6.3	20.9	14.7	4.6	25.6	25.7
Prop In Lane	1.00		1.00	1.00		0.34	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	274	772	409	662	515	511	130	841	1194	311	819	432
V/C Ratio(X)	0.95	1.07	0.39	0.94	0.96	0.96	0.71	0.83	0.46	0.49	0.87	0.87
Avail Cap(c_a), veh/h	274	772	409	662	515	511	138	841	1194	314	819	432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	43.1	30.3	42.0	38.4	38.4	44.3	22.3	10.6	47.6	37.5	37.6
Incr Delay (d2), s/veh	40.0	53.1	0.6	22.4	29.8	30.0	13.7	8.8	1.2	1.2	12.0	20.7
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	9.8	15.7	3.3	10.0	16.7	16.6	2.6	5.6	2.5	2.0	10.0	11.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.1	96.2	30.9	64.3	68.2	68.4	58.0	31.1	11.9	48.8	49.6	58.3
LnGrp LOS	F	F	C	E	E	E	E	C	B	D	D	E
Approach Vol, veh/h		1246			1611			1342			1239	
Approach Delay, s/veh		85.7			66.8			25.0			52.1	
Approach LOS		F			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	37.4	31.0	30.2	14.5	37.9	23.0	38.2				
Change Period (Y+Rc), s	5.1	6.8	6.3	6.3	5.1	6.8	* 6.1	* 6.3				
Max Green Setting (Gmax), s	10.0	27.1	24.7	23.7	10.0	27.1	* 17	* 32				
Max Q Clear Time (g_c+I1), s	6.6	22.9	25.0	25.9	8.3	27.7	17.8	32.2				
Green Ext Time (p_c), s	0.1	2.5	0.0	0.0	0.0	0.0	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	57.5
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 3: N. Las Posas Rd & Armormlite Dr

Year 2050 AM
 02/25/2021

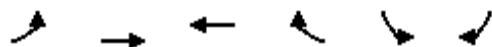


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↑↑↑		↶	↑↑↑	
Traffic Volume (veh/h)	5	5	30	200	10	80	30	640	190	80	880	20
Future Volume (veh/h)	5	5	30	200	10	80	30	640	190	80	880	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	6	6	36	247	12	99	33	711	211	90	989	22
Peak Hour Factor	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	6	8	46	280	33	268	42	2106	617	113	2968	66
Arrive On Green	0.00	0.03	0.03	0.16	0.19	0.19	0.02	0.54	0.54	0.13	1.00	1.00
Sat Flow, veh/h	1781	231	1389	1781	174	1437	1781	3920	1148	1781	5140	114
Grp Volume(v), veh/h	6	0	42	247	0	111	33	616	306	90	655	356
Grp Sat Flow(s),veh/h/ln	1781	0	1620	1781	0	1612	1781	1702	1664	1781	1702	1850
Q Serve(g_s), s	0.4	0.0	2.8	14.9	0.0	6.6	2.0	11.3	11.5	5.4	0.0	0.0
Cycle Q Clear(g_c), s	0.4	0.0	2.8	14.9	0.0	6.6	2.0	11.3	11.5	5.4	0.0	0.0
Prop In Lane	1.00		0.86	1.00		0.89	1.00		0.69	1.00		0.06
Lane Grp Cap(c), veh/h	6	0	53	280	0	301	42	1829	894	113	1966	1068
V/C Ratio(X)	0.93	0.00	0.79	0.88	0.00	0.37	0.79	0.34	0.34	0.79	0.33	0.33
Avail Cap(c_a), veh/h	105	0	287	381	0	535	146	1829	894	211	1966	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.24	0.24	0.24
Uniform Delay (d), s/veh	54.8	0.0	52.8	45.3	0.0	39.1	53.5	14.4	14.4	47.3	0.0	0.0
Incr Delay (d2), s/veh	144.9	0.0	22.1	16.4	0.0	0.8	27.7	0.5	1.0	3.1	0.1	0.2
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	0.4	0.0	1.5	7.8	0.0	2.7	1.2	4.1	4.2	2.3	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	199.7	0.0	74.9	61.8	0.0	39.8	81.2	14.9	15.5	50.4	0.1	0.2
LnGrp LOS	F	A	E	E	A	D	F	B	B	D	A	A
Approach Vol, veh/h		48			358			955			1101	
Approach Delay, s/veh		90.5			55.0			17.4			4.3	
Approach LOS		F			D			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	65.1	22.8	9.1	8.6	69.5	5.9	26.0				
Change Period (Y+Rc), s	6.0	6.0	5.5	5.5	6.0	6.0	5.5	5.5				
Max Green Setting (Gmax), s	13.0	31.0	23.5	19.5	9.0	35.0	6.5	36.5				
Max Q Clear Time (g_c+I1), s	7.4	13.5	16.9	4.8	4.0	2.0	2.4	8.6				
Green Ext Time (p_c), s	0.1	5.3	0.4	0.1	0.0	7.0	0.0	0.6				

Intersection Summary												
HCM 6th Ctrl Delay				18.4								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary
4: W Mission Rd & Palomar College Dwy

Year 2050 AM
02/25/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↗		↖	↗
Traffic Volume (veh/h)	30	980	480	20	10	20
Future Volume (veh/h)	30	980	480	20	10	20
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	1167	632	26	13	27
Peak Hour Factor	0.84	0.84	0.76	0.76	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	76	2488	2135	88	351	313
Arrive On Green	0.04	0.70	0.61	0.61	0.20	0.20
Sat Flow, veh/h	1781	3647	3572	143	1781	1585
Grp Volume(v), veh/h	36	1167	323	335	13	27
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1845	1781	1585
Q Serve(g_s), s	2.2	16.1	9.4	9.4	0.6	1.5
Cycle Q Clear(g_c), s	2.2	16.1	9.4	9.4	0.6	1.5
Prop In Lane	1.00			0.08	1.00	1.00
Lane Grp Cap(c), veh/h	76	2488	1091	1132	351	313
V/C Ratio(X)	0.48	0.47	0.30	0.30	0.04	0.09
Avail Cap(c_a), veh/h	230	2488	1091	1132	351	313
HCM Platoon Ratio	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	1.00
Uniform Delay (d), s/veh	51.5	7.4	10.0	10.0	35.7	36.1
Incr Delay (d2), s/veh	4.6	0.6	0.7	0.7	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.1	3.5	3.6	0.3	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.1	8.0	10.7	10.7	35.9	36.6
LnGrp LOS	E	A	B	B	D	D
Approach Vol, veh/h		1203	658		40	
Approach Delay, s/veh		9.4	10.7		36.4	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		83.0		27.0	9.5	73.5
Change Period (Y+Rc), s		* 6		* 5.3	* 4.8	* 6
Max Green Setting (Gmax), s		* 77		* 22	* 14	* 58
Max Q Clear Time (g_c+I1), s		18.1		3.5	4.2	11.4
Green Ext Time (p_c), s		10.3		0.1	0.0	4.0

Intersection Summary

HCM 6th Ctrl Delay	10.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
 1: S Santa Fe Ave & N Rancho Santa Fe Rd

Year 2050 PM
 02/25/2021



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	470	720	340	980	5	1330	270
Future Volume (vph)	470	720	340	980	5	1330	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Lane Util. Factor	0.97	0.88	1.00	0.95	1.00	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	2787	1770	3539	1770	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	2787	1770	3539	1770	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	505	774	370	1065	6	1602	325
RTOR Reduction (vph)	0	5	0	0	0	0	51
Lane Group Flow (vph)	505	769	370	1065	6	1602	274
Turn Type	Prot	pm+ov	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	5	5	2	1	6	4
Permitted Phases		4					6
Actuated Green, G (s)	20.4	45.9	25.5	71.2	1.1	47.6	68.0
Effective Green, g (s)	20.4	45.9	25.5	71.2	1.1	47.6	68.0
Actuated g/C Ratio	0.19	0.42	0.23	0.65	0.01	0.43	0.62
Clearance Time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	639	1168	412	2301	17	1538	983
v/s Ratio Prot	c0.15	0.15	c0.21	0.30	0.00	c0.45	0.05
v/s Ratio Perm		0.12					0.12
v/c Ratio	0.79	0.66	0.90	0.46	0.35	1.04	0.28
Uniform Delay, d1	42.5	25.5	40.7	9.6	53.8	30.9	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6	1.4	21.6	0.7	12.2	34.6	0.2
Delay (s)	49.1	26.9	62.3	10.3	66.0	65.5	9.7
Level of Service	D	C	E	B	E	E	A
Approach Delay (s)	35.6			23.7		56.1	
Approach LOS	D			C		E	

Intersection Summary			
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
 2: N. Las Posas Rd & W. Mission Rd

Year 2050 PM
 02/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘	↑↑	↗↘	↘↗	↑↑↗	
Traffic Volume (veh/h)	360	1150	150	460	680	150	240	1020	590	130	840	120
Future Volume (veh/h)	360	1150	150	460	680	150	240	1020	590	130	840	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1595	1595	1870	1870	1595	1595	1595	1870	1595	1870
Adj Flow Rate, veh/h	396	1264	165	529	782	172	289	1229	711	140	903	129
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	901	526	394	682	150	206	1097	1179	310	1218	173
Arrive On Green	0.15	0.25	0.25	0.13	0.24	0.24	0.27	0.72	0.72	0.09	0.32	0.32
Sat Flow, veh/h	1781	3554	1351	2946	2896	637	1519	3030	2379	3456	3851	548
Grp Volume(v), veh/h	396	1264	165	529	480	474	289	1229	711	140	680	352
Grp Sat Flow(s),veh/h/ln	1781	1777	1351	1473	1777	1756	1519	1515	1189	1728	1451	1496
Q Serve(g_s), s	16.9	27.9	9.3	14.7	25.9	25.9	14.9	39.8	17.8	4.2	23.0	23.2
Cycle Q Clear(g_c), s	16.9	27.9	9.3	14.7	25.9	25.9	14.9	39.8	17.8	4.2	23.0	23.2
Prop In Lane	1.00		1.00	1.00		0.36	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	274	901	526	394	418	413	206	1097	1179	310	918	473
V/C Ratio(X)	1.45	1.40	0.31	1.34	1.15	1.15	1.40	1.12	0.60	0.45	0.74	0.74
Avail Cap(c_a), veh/h	274	901	526	394	418	413	206	1097	1179	314	918	473
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	41.0	23.4	47.7	42.0	42.1	40.1	15.2	8.0	47.5	33.6	33.6
Incr Delay (d2), s/veh	220.6	187.8	0.3	170.8	90.6	90.9	196.2	60.8	1.2	1.0	5.3	10.2
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	24.0	35.1	2.9	14.5	21.4	21.1	15.7	13.7	2.3	1.8	8.4	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	267.1	228.8	23.7	218.4	132.7	132.9	236.3	75.9	9.1	48.5	38.9	43.8
LnGrp LOS	F	F	C	F	F	F	F	F	A	D	D	D
Approach Vol, veh/h		1825			1483			2229			1172	
Approach Delay, s/veh		218.6			163.3			75.4			41.5	
Approach LOS		F			F			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	46.8	21.0	34.2	20.0	41.8	23.0	32.2				
Change Period (Y+Rc), s	5.1	6.8	6.3	6.3	5.1	6.8	* 6.1	* 6.3				
Max Green Setting (Gmax), s	10.0	33.1	14.7	27.7	14.9	28.2	* 17	* 26				
Max Q Clear Time (g_c+I1), s	6.2	41.8	16.7	29.9	16.9	25.2	18.9	27.9				
Green Ext Time (p_c), s	0.1	0.0	0.0	0.0	0.0	1.7	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	127.9
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 3: N. Las Posas Rd & Armorldite Dr

Year 2050 PM
 02/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (veh/h)	10	5	0	320	0	130	20	1270	420	120	760	10
Future Volume (veh/h)	10	5	0	320	0	130	20	1270	420	120	760	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	15	7	0	492	0	200	22	1380	457	125	792	10
Peak Hour Factor	0.67	0.67	0.67	0.65	0.65	0.65	0.92	0.92	0.92	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	17	16	0	397	0	351	27	1850	608	130	2830	36
Arrive On Green	0.01	0.01	0.00	0.22	0.00	0.22	0.01	0.49	0.49	0.15	1.00	1.00
Sat Flow, veh/h	1781	1870	0	1781	0	1585	1781	3800	1249	1781	5197	66
Grp Volume(v), veh/h	15	7	0	492	0	200	22	1235	602	125	519	283
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1585	1781	1702	1645	1781	1702	1859
Q Serve(g_s), s	0.9	0.4	0.0	24.5	0.0	12.4	1.4	32.2	32.6	7.7	0.0	0.0
Cycle Q Clear(g_c), s	0.9	0.4	0.0	24.5	0.0	12.4	1.4	32.2	32.6	7.7	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.76	1.00		0.04
Lane Grp Cap(c), veh/h	17	16	0	397	0	351	27	1657	801	130	1853	1012
V/C Ratio(X)	0.86	0.43	0.00	1.24	0.00	0.57	0.83	0.75	0.75	0.96	0.28	0.28
Avail Cap(c_a), veh/h	66	306	0	397	0	553	87	1657	801	130	1853	1012
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.10	0.10	0.10
Uniform Delay (d), s/veh	54.4	54.2	0.0	42.8	0.0	38.1	54.0	22.7	22.8	46.9	0.0	0.0
Incr Delay (d2), s/veh	66.9	16.7	0.0	127.8	0.0	1.5	44.4	3.1	6.4	17.2	0.0	0.1
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	0.7	0.3	0.0	24.7	0.0	4.9	0.9	12.5	12.9	3.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.2	70.9	0.0	170.6	0.0	39.6	98.4	25.8	29.3	64.1	0.0	0.1
LnGrp LOS	F	E	A	F	A	D	F	C	C	E	A	A
Approach Vol, veh/h		22			692			1859				927
Approach Delay, s/veh		105.2			132.7			27.8				8.7
Approach LOS		F			F			C				A
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	59.5	30.0	6.5	7.6	65.9	6.6	29.9				
Change Period (Y+Rc), s	6.0	6.0	5.5	5.5	6.0	6.0	5.5	5.5				
Max Green Setting (Gmax), s	8.0	36.5	24.5	18.0	5.4	39.1	4.1	38.4				
Max Q Clear Time (g_c+I1), s	9.7	34.6	26.5	2.4	3.4	2.0	2.9	14.4				
Green Ext Time (p_c), s	0.0	1.7	0.0	0.0	0.0	5.3	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay				44.0								
HCM 6th LOS				D								

HCM 6th Signalized Intersection Summary
 4: W Mission Rd & Palomar College Dwy

Year 2050 PM
 02/25/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↶↶	↶↶		↶	↶
Traffic Volume (veh/h)	20	970	630	5	10	20
Future Volume (veh/h)	20	970	630	5	10	20
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	1000	692	5	12	25
Peak Hour Factor	0.97	0.97	0.91	0.91	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	54	2488	2265	16	351	313
Arrive On Green	0.03	0.70	0.63	0.63	0.20	0.20
Sat Flow, veh/h	1781	3647	3710	26	1781	1585
Grp Volume(v), veh/h	21	1000	340	357	12	25
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1866	1781	1585
Q Serve(g_s), s	1.3	12.9	9.7	9.7	0.6	1.4
Cycle Q Clear(g_c), s	1.3	12.9	9.7	9.7	0.6	1.4
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	54	2488	1113	1168	351	313
V/C Ratio(X)	0.39	0.40	0.31	0.31	0.03	0.08
Avail Cap(c_a), veh/h	214	2488	1113	1168	351	313
HCM Platoon Ratio	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	1.00
Uniform Delay (d), s/veh	52.4	6.9	9.5	9.5	35.7	36.0
Incr Delay (d2), s/veh	4.6	0.5	0.7	0.7	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	4.1	3.5	3.7	0.3	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.9	7.4	10.2	10.2	35.9	36.5
LnGrp LOS	E	A	B	B	D	D
Approach Vol, veh/h		1021	697		37	
Approach Delay, s/veh		8.4	10.2		36.3	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		83.0		27.0	8.1	74.9
Change Period (Y+Rc), s		* 6		* 5.3	* 4.8	* 6
Max Green Setting (Gmax), s		* 77		* 22	* 13	* 59
Max Q Clear Time (g_c+I1), s		14.9		3.4	3.3	11.7
Green Ext Time (p_c), s		8.1		0.1	0.0	4.2

Intersection Summary

HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX F

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS – YEAR 2050 + PROJECT

HCM Signalized Intersection Capacity Analysis
 1: S Santa Fe Ave & N Rancho Santa Fe Rd

Year 2050 + P AM
 03/01/2021



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	280	307	397	707	10	1127	390
Future Volume (vph)	280	307	397	707	10	1127	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Lane Util. Factor	0.97	0.88	1.00	0.95	1.00	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	2787	1770	3539	1770	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	2787	1770	3539	1770	3539	1583
Peak-hour factor, PHF	0.87	0.87	0.88	0.88	0.86	0.86	0.86
Adj. Flow (vph)	322	353	451	803	12	1310	453
RTOR Reduction (vph)	0	11	0	0	0	0	59
Lane Group Flow (vph)	322	342	451	803	12	1310	394
Turn Type	Prot	pm+ov	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	5	5	2	1	6	4
Permitted Phases		4					6
Actuated Green, G (s)	15.8	46.9	31.1	75.9	1.0	46.6	62.4
Effective Green, g (s)	15.8	46.9	31.1	75.9	1.0	46.6	62.4
Actuated g/C Ratio	0.14	0.43	0.28	0.69	0.01	0.43	0.57
Clearance Time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	495	1193	502	2453	16	1506	902
v/s Ratio Prot	c0.09	0.08	c0.25	0.23	0.01	c0.37	0.06
v/s Ratio Perm		0.04					0.19
v/c Ratio	0.65	0.29	0.90	0.33	0.75	0.87	0.44
Uniform Delay, d1	44.2	20.4	37.7	6.7	54.1	28.7	13.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.1	18.6	0.4	106.0	7.1	0.3
Delay (s)	47.3	20.5	56.3	7.0	160.1	35.8	13.8
Level of Service	D	C	E	A	F	D	B
Approach Delay (s)	33.3			24.7		31.0	
Approach LOS	C			C		C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
 2: N. Las Posas Rd & W. Mission Rd

Year 2050 + P AM
 03/01/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘	↑↑	↗↘	↘↗	↑↑↗	
Traffic Volume (veh/h)	210	670	150	473	590	120	107	537	443	140	927	80
Future Volume (veh/h)	210	670	150	473	590	120	107	537	443	140	927	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1595	1595	1870	1870	1595	1595	1595	1870	1595	1870
Adj Flow Rate, veh/h	259	827	185	657	819	167	141	707	583	152	1008	87
Peak Hour Factor	0.81	0.81	0.81	0.72	0.72	0.72	0.76	0.76	0.76	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	275	804	430	632	847	173	139	934	1243	311	1251	108
Arrive On Green	0.15	0.23	0.23	0.21	0.29	0.29	0.15	0.51	0.51	0.09	0.31	0.31
Sat Flow, veh/h	1781	3554	1351	2946	2940	599	1519	3030	2379	3456	4082	352
Grp Volume(v), veh/h	259	827	185	657	495	491	141	707	583	152	716	379
Grp Sat Flow(s),veh/h/ln	1781	1777	1351	1473	1777	1762	1519	1515	1189	1728	1451	1531
Q Serve(g_s), s	15.8	24.9	11.9	23.6	30.2	30.2	10.1	20.4	15.3	4.6	25.0	25.1
Cycle Q Clear(g_c), s	15.8	24.9	11.9	23.6	30.2	30.2	10.1	20.4	15.3	4.6	25.0	25.1
Prop In Lane	1.00		1.00	1.00		0.34	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	275	804	430	632	512	508	139	934	1243	311	889	469
V/C Ratio(X)	0.94	1.03	0.43	1.04	0.97	0.97	1.01	0.76	0.47	0.49	0.81	0.81
Avail Cap(c_a), veh/h	275	804	430	632	512	508	139	934	1243	314	889	469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	42.5	29.6	43.2	38.6	38.6	46.6	23.4	11.4	47.6	35.1	35.2
Incr Delay (d2), s/veh	38.5	39.1	0.7	46.4	31.3	31.5	76.0	5.3	1.2	1.2	7.7	13.9
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	9.7	14.8	3.8	12.3	16.9	16.8	6.4	5.9	2.9	2.0	9.3	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.5	81.7	30.3	89.6	69.9	70.1	122.6	28.7	12.5	48.8	42.8	49.0
LnGrp LOS	F	F	C	F	E	E	F	C	B	D	D	D
Approach Vol, veh/h		1271			1643			1431			1247	
Approach Delay, s/veh		74.8			77.8			31.4			45.4	
Approach LOS		E			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	40.9	29.9	31.2	15.2	40.7	23.1	38.0				
Change Period (Y+Rc), s	5.1	6.8	6.3	6.3	5.1	6.8	* 6.1	* 6.3				
Max Green Setting (Gmax), s	10.0	27.2	23.6	24.7	10.1	27.1	* 17	* 32				
Max Q Clear Time (g_c+I1), s	6.6	22.4	25.6	26.9	12.1	27.1	17.8	32.2				
Green Ext Time (p_c), s	0.1	2.8	0.0	0.0	0.0	0.0	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	58.0
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 3: N. Las Posas Rd & Armorldite Dr

Year 2050 + P AM
 03/01/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (veh/h)	5	5	30	200	10	83	30	653	190	134	893	20
Future Volume (veh/h)	5	5	30	200	10	83	30	653	190	134	893	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	6	6	36	247	12	102	33	726	211	151	1003	22
Peak Hour Factor	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	6	8	46	280	32	269	42	1975	567	177	2969	65
Arrive On Green	0.00	0.03	0.03	0.16	0.19	0.19	0.02	0.50	0.50	0.20	1.00	1.00
Sat Flow, veh/h	1781	231	1389	1781	170	1441	1781	3940	1131	1781	5141	113
Grp Volume(v), veh/h	6	0	42	247	0	114	33	626	311	151	664	361
Grp Sat Flow(s),veh/h/ln	1781	0	1620	1781	0	1611	1781	1702	1667	1781	1702	1850
Q Serve(g_s), s	0.4	0.0	2.8	14.9	0.0	6.8	2.0	12.4	12.6	9.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	0.0	2.8	14.9	0.0	6.8	2.0	12.4	12.6	9.0	0.0	0.0
Prop In Lane	1.00		0.86	1.00		0.89	1.00		0.68	1.00		0.06
Lane Grp Cap(c), veh/h	6	0	53	280	0	301	42	1706	835	177	1966	1068
V/C Ratio(X)	0.93	0.00	0.79	0.88	0.00	0.38	0.79	0.37	0.37	0.85	0.34	0.34
Avail Cap(c_a), veh/h	105	0	287	381	0	535	146	1706	835	211	1966	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.17	0.17	0.17
Uniform Delay (d), s/veh	54.8	0.0	52.8	45.3	0.0	39.2	53.5	16.8	16.8	43.3	0.0	0.0
Incr Delay (d2), s/veh	144.9	0.0	22.1	16.4	0.0	0.8	27.7	0.6	1.3	5.1	0.1	0.1
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	0.4	0.0	1.5	7.8	0.0	2.8	1.2	4.6	4.8	3.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	199.7	0.0	74.9	61.8	0.0	40.0	81.2	17.4	18.1	48.4	0.1	0.1
LnGrp LOS	F	A	E	E	A	D	F	B	B	D	A	A
Approach Vol, veh/h		48			361			970				1176
Approach Delay, s/veh		90.5			54.9			19.8				6.3
Approach LOS		F			D			B				A
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	61.1	22.8	9.1	8.6	69.5	5.9	26.0				
Change Period (Y+Rc), s	6.0	6.0	5.5	5.5	6.0	6.0	5.5	5.5				
Max Green Setting (Gmax), s	13.0	31.0	23.5	19.5	9.0	35.0	6.5	36.5				
Max Q Clear Time (g_c+I1), s	11.0	14.6	16.9	4.8	4.0	2.0	2.4	8.8				
Green Ext Time (p_c), s	0.1	5.3	0.4	0.1	0.0	7.1	0.0	0.7				

Intersection Summary

HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary
4: W Mission Rd & Palomar College Dwy

Year 2050 + P AM
03/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↗		↙	↘
Traffic Volume (veh/h)	33	1000	500	20	10	23
Future Volume (veh/h)	33	1000	500	20	10	23
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	1190	658	26	13	31
Peak Hour Factor	0.84	0.84	0.76	0.76	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	79	2488	2133	84	351	313
Arrive On Green	0.04	0.70	0.61	0.61	0.20	0.20
Sat Flow, veh/h	1781	3647	3578	138	1781	1585
Grp Volume(v), veh/h	39	1190	335	349	13	31
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1846	1781	1585
Q Serve(g_s), s	2.4	16.6	9.9	9.9	0.6	1.8
Cycle Q Clear(g_c), s	2.4	16.6	9.9	9.9	0.6	1.8
Prop In Lane	1.00			0.07	1.00	1.00
Lane Grp Cap(c), veh/h	79	2488	1088	1130	351	313
V/C Ratio(X)	0.49	0.48	0.31	0.31	0.04	0.10
Avail Cap(c_a), veh/h	230	2488	1088	1130	351	313
HCM Platoon Ratio	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	1.00
Uniform Delay (d), s/veh	51.4	7.4	10.2	10.2	35.7	36.1
Incr Delay (d2), s/veh	4.7	0.7	0.7	0.7	0.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	5.2	3.6	3.8	0.3	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.1	8.1	10.9	10.9	35.9	36.8
LnGrp LOS	E	A	B	B	D	D
Approach Vol, veh/h		1229	684		44	
Approach Delay, s/veh		9.6	10.9		36.5	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		83.0		27.0	9.7	73.3
Change Period (Y+Rc), s		* 6		* 5.3	* 4.8	* 6
Max Green Setting (Gmax), s		* 77		* 22	* 14	* 58
Max Q Clear Time (g_c+I1), s		18.6		3.8	4.4	11.9
Green Ext Time (p_c), s		10.7		0.1	0.0	4.2

Intersection Summary

HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
 1: S Santa Fe Ave & N Rancho Santa Fe Rd

Year 2050 + P PM
 03/01/2021



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	470	728	347	987	5	1338	270
Future Volume (vph)	470	728	347	987	5	1338	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Lane Util. Factor	0.97	0.88	1.00	0.95	1.00	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	2787	1770	3539	1770	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	2787	1770	3539	1770	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	505	783	377	1073	6	1612	325
RTOR Reduction (vph)	0	5	0	0	0	0	49
Lane Group Flow (vph)	505	778	377	1073	6	1612	276
Turn Type	Prot	pm+ov	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	5	5	2	1	6	4
Permitted Phases		4					6
Actuated Green, G (s)	20.4	46.3	25.9	71.2	1.1	47.2	67.6
Effective Green, g (s)	20.4	46.3	25.9	71.2	1.1	47.2	67.6
Actuated g/C Ratio	0.19	0.42	0.24	0.65	0.01	0.43	0.62
Clearance Time (s)	6.5	4.5	4.5	5.8	4.5	5.0	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	639	1178	418	2301	17	1525	977
v/s Ratio Prot	c0.15	0.16	c0.21	0.30	0.00	c0.46	0.05
v/s Ratio Perm		0.12					0.12
v/c Ratio	0.79	0.66	0.90	0.47	0.35	1.06	0.28
Uniform Delay, d1	42.5	25.3	40.6	9.6	53.8	31.1	9.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6	1.4	22.1	0.7	12.2	39.8	0.2
Delay (s)	49.1	26.7	62.7	10.3	66.0	70.9	9.9
Level of Service	D	C	E	B	E	E	A
Approach Delay (s)	35.5			23.9		60.7	
Approach LOS	D			C		E	

Intersection Summary			
HCM 2000 Control Delay	42.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
 2: N. Las Posas Rd & W. Mission Rd

Year 2050 + P PM
 03/01/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘	↑↑	↗↘	↘↗	↑↑↗	
Traffic Volume (veh/h)	360	1150	173	487	680	150	281	1027	616	130	848	120
Future Volume (veh/h)	360	1150	173	487	680	150	281	1027	616	130	848	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1595	1595	1870	1870	1595	1595	1595	1870	1595	1870
Adj Flow Rate, veh/h	396	1264	190	560	782	172	339	1237	742	140	912	129
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	930	549	421	705	155	220	1045	1160	310	1118	158
Arrive On Green	0.16	0.26	0.26	0.14	0.24	0.24	0.29	0.69	0.69	0.09	0.29	0.29
Sat Flow, veh/h	1781	3554	1351	2946	2896	637	1519	3030	2379	3456	3856	543
Grp Volume(v), veh/h	396	1264	190	560	480	474	339	1237	742	140	686	355
Grp Sat Flow(s),veh/h/ln	1781	1777	1351	1473	1777	1756	1519	1515	1189	1728	1451	1497
Q Serve(g_s), s	17.9	28.8	10.7	15.7	26.8	26.8	15.9	37.9	22.1	4.2	24.2	24.3
Cycle Q Clear(g_c), s	17.9	28.8	10.7	15.7	26.8	26.8	15.9	37.9	22.1	4.2	24.2	24.3
Prop In Lane	1.00		1.00	1.00		0.36	1.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	290	930	549	421	433	428	220	1045	1160	310	842	434
V/C Ratio(X)	1.37	1.36	0.35	1.33	1.11	1.11	1.54	1.18	0.64	0.45	0.81	0.82
Avail Cap(c_a), veh/h	290	930	549	421	433	428	220	1045	1160	314	842	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.28	0.28	0.28	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	40.6	22.6	47.1	41.6	41.6	39.1	17.1	9.5	47.5	36.3	36.4
Incr Delay (d2), s/veh	185.4	168.4	0.4	164.8	76.1	76.3	251.2	85.7	0.8	1.0	8.5	15.7
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	22.6	33.7	3.3	15.2	20.3	20.1	20.0	17.3	2.6	1.8	9.1	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	231.4	209.0	22.9	211.9	117.7	117.9	290.3	102.7	10.3	48.5	44.8	52.1
LnGrp LOS	F	F	C	F	F	F	F	F	B	D	D	D
Approach Vol, veh/h		1850			1514			2318			1181	
Approach Delay, s/veh		194.7			152.6			100.6			47.4	
Approach LOS		F			F			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	44.9	22.0	35.1	21.0	38.9	24.0	33.1				
Change Period (Y+Rc), s	5.1	6.8	6.3	6.3	5.1	6.8	* 6.1	* 6.3				
Max Green Setting (Gmax), s	10.0	31.2	15.7	28.6	15.9	25.3	* 18	* 27				
Max Q Clear Time (g_c+I1), s	6.2	39.9	17.7	30.8	17.9	26.3	19.9	28.8				
Green Ext Time (p_c), s	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	128.3
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
 3: N. Las Posas Rd & Armormlite Dr

Year 2050 + P PM
 03/01/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (veh/h)	10	5	0	320	0	134	20	1285	420	179	775	10
Future Volume (veh/h)	10	5	0	320	0	134	20	1285	420	179	775	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	15	7	0	492	0	206	22	1397	457	186	807	10
Peak Hour Factor	0.67	0.67	0.67	0.65	0.65	0.65	0.92	0.92	0.92	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	17	16	0	397	0	351	27	1787	580	162	2830	35
Arrive On Green	0.01	0.01	0.00	0.22	0.00	0.22	0.01	0.47	0.47	0.18	1.00	1.00
Sat Flow, veh/h	1781	1870	0	1781	0	1585	1781	3814	1238	1781	5198	64
Grp Volume(v), veh/h	15	7	0	492	0	206	22	1246	608	186	528	289
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1585	1781	1702	1648	1781	1702	1859
Q Serve(g_s), s	0.9	0.4	0.0	24.5	0.0	12.8	1.4	33.7	34.2	10.0	0.0	0.0
Cycle Q Clear(g_c), s	0.9	0.4	0.0	24.5	0.0	12.8	1.4	33.7	34.2	10.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.75	1.00		0.03
Lane Grp Cap(c), veh/h	17	16	0	397	0	351	27	1595	772	162	1853	1012
V/C Ratio(X)	0.86	0.43	0.00	1.24	0.00	0.59	0.83	0.78	0.79	1.15	0.28	0.29
Avail Cap(c_a), veh/h	65	306	0	397	0	555	91	1595	772	162	1853	1012
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	54.4	54.2	0.0	42.8	0.0	38.3	54.0	24.5	24.6	45.0	0.0	0.0
Incr Delay (d2), s/veh	66.9	16.7	0.0	127.8	0.0	1.6	44.4	3.9	8.0	73.9	0.0	0.1
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	0.7	0.3	0.0	24.7	0.0	5.1	0.9	13.3	13.9	7.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.3	70.9	0.0	170.6	0.0	39.8	98.4	28.4	32.6	118.9	0.0	0.1
LnGrp LOS	F	E	A	F	A	D	F	C	C	F	A	A
Approach Vol, veh/h		22			698			1876			1003	
Approach Delay, s/veh		105.2			132.0			30.6			22.1	
Approach LOS		F			F			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.0	57.5	30.0	6.5	7.6	65.9	6.6	29.9				
Change Period (Y+Rc), s	6.0	6.0	5.5	5.5	6.0	6.0	5.5	5.5				
Max Green Setting (Gmax), s	10.0	34.5	24.5	18.0	5.6	38.9	4.0	38.5				
Max Q Clear Time (g_c+I1), s	12.0	36.2	26.5	2.4	3.4	2.0	2.9	14.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	5.4	0.0	1.3				

Intersection Summary

HCM 6th Ctrl Delay	48.3
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary
4: W Mission Rd & Palomar College Dwy

Year 2050 + P PM
03/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↑↑	↑↑		↖	↖
Traffic Volume (veh/h)	24	992	653	5	10	24
Future Volume (veh/h)	24	992	653	5	10	24
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	25	1023	718	5	12	30
Peak Hour Factor	0.97	0.97	0.91	0.91	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	61	2488	2251	16	351	313
Arrive On Green	0.03	0.70	0.62	0.62	0.20	0.20
Sat Flow, veh/h	1781	3647	3711	25	1781	1585
Grp Volume(v), veh/h	25	1023	353	370	12	30
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1866	1781	1585
Q Serve(g_s), s	1.5	13.3	10.3	10.3	0.6	1.7
Cycle Q Clear(g_c), s	1.5	13.3	10.3	10.3	0.6	1.7
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	61	2488	1106	1161	351	313
V/C Ratio(X)	0.41	0.41	0.32	0.32	0.03	0.10
Avail Cap(c_a), veh/h	214	2488	1106	1161	351	313
HCM Platoon Ratio	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	1.00
Uniform Delay (d), s/veh	52.1	7.0	9.8	9.8	35.7	36.1
Incr Delay (d2), s/veh	4.4	0.5	0.8	0.7	0.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.2	3.7	3.9	0.3	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.5	7.5	10.5	10.5	35.9	36.7
LnGrp LOS	E	A	B	B	D	D
Approach Vol, veh/h		1048	723		42	
Approach Delay, s/veh		8.6	10.5		36.5	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		83.0		27.0	8.5	74.5
Change Period (Y+Rc), s		* 6		* 5.3	* 4.8	* 6
Max Green Setting (Gmax), s		* 77		* 22	* 13	* 59
Max Q Clear Time (g_c+I1), s		15.3		3.7	3.5	12.3
Green Ext Time (p_c), s		8.4		0.1	0.0	4.4

Intersection Summary

HCM 6th Ctrl Delay	10.0
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX G

PEAK HOUR INTERSECTION AND QUEUING ANALYSIS WORKSHEETS – PROJECT DRIVEWAY YEAR 2050 + PROJECT

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	67	0	1074	1549	47
Future Vol, veh/h	0	67	0	1074	1549	47
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	0	73	0	1167	1684	51

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	868	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	254	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	254	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	254	-	-
HCM Lane V/C Ratio	-	0.287	-	-
HCM Control Delay (s)	-	24.8	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	1.1	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	74	0	1909	1493	76
Future Vol, veh/h	0	74	0	1909	1493	76
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	0	80	0	2075	1623	83

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	853	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-
Pot Cap-1 Maneuver	0	260	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	260	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 260	-	-
HCM Lane V/C Ratio	- 0.309	-	-
HCM Control Delay (s)	- 24.9	-	-
HCM Lane LOS	- C	-	-
HCM 95th %tile Q(veh)	- 1.3	-	-